

Workshop Manual

Octavia II 2004 ➤ , Octavia II 2010 ➤ ,
Superb II 2008 ➤ , Superb II 2011 ➤ ,
Yeti 2010 ➤ , Yeti 2011 ➤

1.8/112; 118 kW; 2.0/147 kW TSI engine									
Engine ID	BZB	CDA A	CDA B	CCZ A					

Edition 06.2019



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Technical information should always be available to the foremen and mechanics, because their careful and constant adherence to the instructions is essential to ensure vehicle road-worthiness and safety. In addition, the normal basic safety precautions for working on motor vehicles must, as a matter of course, be observed.

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00 – Technical data

1 Denomination

(SRL001394; Edition 06.2019)

⇒ **"1.1 Engine number, engine data", page 1**

1.1 Engine number, engine data

The engine identification characters and the engine number are located left at the joint separating the engine/gearbox.

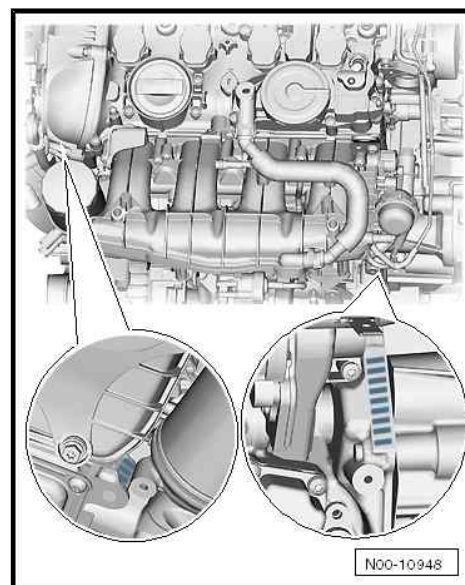
In addition, the "engine identification characters" and "serial number" are attached to the cylinder block behind the oil filter.

The engine identification characters are also indicated on the vehicle data sticker.

The engine number consists of up to nine digits (alphanumeric). The first part represents the "engine code" (a maximum of 3 identification letters), the second part the "serial number" (six characters). If more than 999 999 engines with the same engine code were produced then the first digit of the six part section will be replaced by a letter.

Vehicles with four-digit engine identification characters

Starting with the letter "C", new four digit engine codes have been introduced. The first 3 digits denote the mechanical design of the engine and are stamped on the engine as before. The fourth digit refers to the output and torque of the engine and depends upon the engine control unit.



Note

The four digit engine code is on the vehicle data sticker ⇒ Maintenance ; Booklet Octavia II/Superb II/Yeti and on the engine control unit.

Engine codes	BZB	CDA A	CDAB	CCZA
Manufactured				
Octavia II	06.2007 ➤ 10.2008	11.2008 ➤ 04.2013	03.2009 ➤ 05.2013	11.2008 ➤ 04.2013
Superb II	03.2008 ➤ 05.2009	09.2008 ➤ 08.2015	03.2009 ➤ 08.2015	05.2010 ➤ 08.2015
Yeti		05.2009 ➤ 05.2015	11.2009 ➤ 07.2017	---
Emission standards conforming to	EU-4	EU-2 DDK, EU-4 ¹⁾ , EU-5	EU-2/BS3, EU-4 ¹⁾ , EU-5	EU-4 ¹⁾ , EU-5
Displacement cm ³	1798	1798	1798	1984
Output kW at rpm	118/5000	118/5000	112/6000	147/5100
Torque Nm at rpm	250/1500	250/1500	250/1500	280/1700
Bore Ø mm	82.5	82.5	82.5	82.5
Stroke mm	84.2	84.2	84.2	92.8
Compression ratio	9,6:1	9,6:1	9,6:1	9,6:1
Cylinder/valves per cylinder	4/4	4/4	4/4	4/4
RON	unleaded 95 ²⁾	unleaded 95 ²⁾	unleaded 95 ²⁾	unleaded 95 ²⁾



Engine codes	BZB	CDAA	CDAB	CCZA
Ignition system, fuel injection	Motronic MED 17.5	Motronic MED 17.5	Motronic MED 17.5	Motronic MED 17.5
Type of fuel preparation	Direct injection homogeneous	Direct injection homogeneous	Direct injection homogeneous	Direct injection homogeneous
Knock control	1 sensor	1 sensor	1 sensor	1 sensor
Lambda control	1 Lambda probe	2 Lambda probes	2 Lambda probes	2 Lambda probes
Three-way catalytic converter	yes	yes	yes	yes
Exhaust gas recirculation	no	no	no	no
Intake manifold change-over	yes	yes	yes	yes
Camshaft adjustment	yes	yes	yes	yes
Balancing shafts	yes	yes	yes	yes
Secondary air system	no	no	no	no
Exhaust gas turbocharger	yes	yes	yes	yes

1) fulfills the requirements of the exhaust emission standard EU-5

2) At least 91 RON in exceptional cases, although engine output is reduced



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2 Safety instructions

⇒ [“2.1 Safety precautions when working on fuel supply system”, page 3](#)

⇒ [“2.2 Safety measures to apply when working on the fuel injection and ignition system”, page 3](#)

⇒ [“2.3 Reducing pressure in the high pressure system”, page 4](#)

2.1 Safety precautions when working on fuel supply system

CAUTION

The safety measures for the pressure reduction in the high pressure system must be observed.

Fuel feed line is pressurised. Wear safety goggles and safety clothing, in order to avoid injuries and skin contact with fuel. Place a clean cleaning cloth around the connection point before detaching wiring. Reduce pressure by carefully removing the wiring.

NOTICE

When undertaking all installation work, particularly in the engine compartment because of its cramped construction, please observe the following:

- ◆ Lay lines of all kinds (for example, for fuel, hydraulic fluid, activated charcoal filter, cooling fluid and refrigerant, brake fluid, vacuum) and electrical lines in such a way that the original line guide is re-established.
- ◆ To avoid damage to lines/wiring, ensure sufficient clearance to all moving or hot components.

When removing and installing the fuel gauge transmitter or the fuel delivery unit from a full or partly filled fuel tank, pay attention to the following points:

- ◆ The extraction hose of an exhaust extraction system which is switched on, must be positioned close to the assembly opening of the fuel tank in order to extract the released fuel vapours, even before the work is commenced. If no exhaust extraction system is available, a radial fan (motor not in air flow of fan) with a delivery volume of more than 15 m³/h must be used.
- ◆ Prevent skin contact with fuel!
- ◆ Wear fuel-resistant gloves!

2.2 Safety measures to apply when working on the fuel injection and ignition system

CAUTION

The safety measures for the pressure reduction in the high pressure system must be observed.

Fuel line is under pressure! Wear safety goggles and safety clothing, in order to avoid injuries and skin contact with fuel. Place a clean cleaning cloth around the connection point before detaching wiring. Reduce pressure by carefully removing the wiring.



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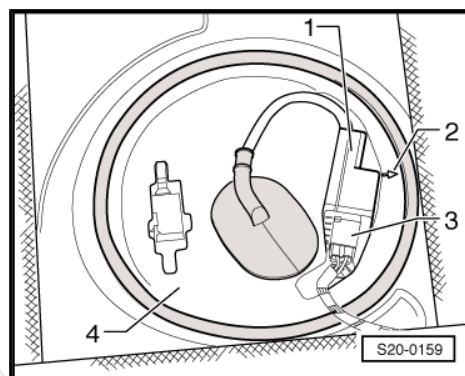
Octavia II 2004 ➤ , Octavia II 2010 ➤ , Superb II 2008 ➤ , Superb II 20 ...
1.8/112; 118 kW; 2.0/147 kW TSI engine - Edition 06.2019

Observe the following points to prevent injury to persons and (or) damage to the injection and ignition system:

- ◆ Do not touch or pull off ignition cables with output stage when engine is running or turning at starter speed.
- ◆ Ignition must be switched off before disconnecting and re-connecting the cables of the fuel injection and the ignition system as well as of the test equipment.
- ◆ If the engine must be operated at start speed without it starting, as for example, when checking the compression pressure, open lid of fuse carrier in the engine compartment and unplug fuse for Motronic current supply relay - J271- ➔ Current flow diagrams, Electrical fault finding and Fitting locations.
- ◆ Fuel pump is activated by switching on ignition and via driver door contact switch. Before opening the fuel system and for reasons of safety, if the battery is not disconnected, the plug -3- must be disconnected from the fuel pump control unit.

Note the following if testers and measuring instruments have to be used during a road test:

- ◆ Always secure the test and measuring devices on the rear seat and have a second person operate them there.
- ◆ If the test and measuring devices are operated from the passenger seat, the passenger could be injured by the release of the passenger airbag in the event of an accident.



2.3 Reducing pressure in the high pressure system

⚠ CAUTION

The injection system consists of a high pressure part (max. pressure of 15 MPa = 150 bar) and a low pressure part (pressure of approx. 0.6 MPa = 6 bar).

Before opening the high pressure system, e.g. removing the high pressure pump, the fuel distributor, the injection valves, the fuel pipes or the fuel pressure sender - G247- , the fuel pressure in the high pressure area with a remaining pressure of approx. 0.6 MPa (6 bar) must be reduced. The procedure for this is described below.

- Connect the ➔ Vehicle diagnostic tester and carry out the targeted function "Remove high fuel pressure".
- Switch off ignition.

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- For safety reasons before opening the fuel system disconnect the plug -3- from the fuel pump control unit.

 CAUTION

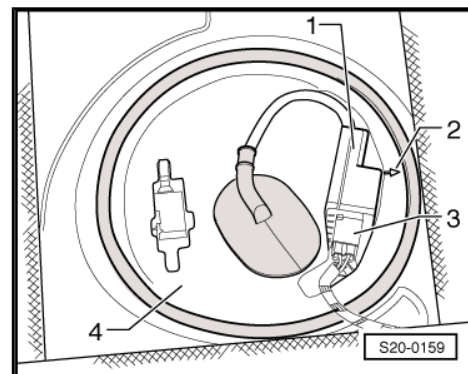
The fuel lines are pressurized! Wear safety goggles and safety clothing, in order to avoid injuries and skin contact with fuel. Before opening the high pressure system, lay cleaning cloths around the connection point.

- Now lay a clean cleaning cloth around the connection point and carefully open it up, in order to reduce the remaining pressure of approx 0.6 MPa (6 bar). Collect the fuel which flows out.



Note

Interrogate the fault memory for the engine control unit at the end of the following work and delete all the fault entries.



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3 Repair instructions

⇒ [“3.1 Rules of cleanliness”, page 6](#)

⇒ [“3.2 Foreign bodies in the engine”, page 6](#)

⇒ [“3.3 Contact corrosion”, page 6](#)

⇒ [“3.4 Cable routing and securing”, page 6](#)

⇒ [“3.5 Assembly of radiators and condensers”, page 7](#)

3.1 Rules of cleanliness

Carefully observe the following “rules” for cleanliness when working on the fuel supply/injection system:

- ◆ Thoroughly clean the connection points and their surroundings before releasing.
- ◆ Place removed parts on a clean surface and cover. Use lint-free cloths.
- ◆ Carefully cover or close open components if the repair is not completed immediately.
- ◆ Only install clean parts: remove spare parts from their wrapping immediately before fitting. Do not use any parts which have been stored unwrapped (e.g. in tool boxes etc.).
- ◆ When the system is opened: do not use compressed air. Do not move the vehicle.
- ◆ Ensure that no fuel runs onto the fuel hoses. If happens, clean the hoses immediately.
- ◆ Protect electrical plug connections from dirt and moisture and only connect them when dry.

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3.2 Foreign bodies in the engine

To prevent the penetration of foreign bodies, open channels of the inlet connection and exhaust tract must be sealed with suitable plugs during assembly works on the engine, for example from the screw plug set for engine - VAS 6122- .

3.3 Contact corrosion

The use of unsuitable connection elements (screws, nuts, washers, etc.) can cause contact corrosion.

This is why only connection elements with a special surface coatings are fitted.

Therefore, the rubber or plastic parts and the adhesives are made from electrically non-conductive materials.

If there is a question mark about the suitability of parts, generally use new parts ⇒ ETKA - Electronic Catalogue of Original Parts .

3.4 Cable routing and securing

- ◆ To ensure the original fitting position, e.g. lines for fuel, hydraulics, vacuum, activated charcoal filter system lines or electric cables must be marked before removal. Make photos or sketches where necessary.
- ◆ Sufficient clearance from all moving or hot components must be ensured in the engine compartment due to its cramped construction. This prevents damage to lines.

3.5 Assembly of radiators and condensers

The radiator, condenser and charge air cooler may have minor indentations on the fins, even if assembled correctly. This does not constitute damage. Radiators, condensers and charge air coolers must not be replaced because of these indentations.



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10 – Removing and installing engine

1 Removing and installing engine

⇒ [“1.1 Removing engine”, page 8](#)

⇒ [“1.2 Disconnecting engine and gearbox”, page 17](#)

⇒ [“1.3 Securing the engine to the assembly stand”, page 17](#)

⇒ [“1.4 Installing engine”, page 18](#)

⇒ [“1.5 Removing and installing engine trim panel”, page 21](#)

1.1 Removing engine

Special tools and workshop equipment required

- ◆ Engine/gearbox jack , e.g. -V.A.G 1383 A-
- ◆ Double ladder
- ◆ Engine mount - T10359-
- ◆ Removal tool for inner lining of the door panel - T10236-
- ◆ Pliers for spring-type clips
- ◆ Catch pan , e.g. -VAS 6208-
- ◆ Grease - G 000 100-
- ◆ Cable strap



Note

- ◆ *The engine is removed downwards together with the gearbox.*
- ◆ *All cable straps that have been loosened or cut open when the engine was removed must be attached again in the same location when the engine is installed again.*
- ◆ *Collect drained coolant for proper disposal.*



NOTICE

When undertaking all installation work, particularly in the engine compartment because of its cramped construction, please observe the following:

- ◆ Lay lines of all kinds (for example, for fuel, hydraulic fluid, activated charcoal filter, cooling fluid and refrigerant, brake fluid, vacuum) and electrical lines in such a way that the original line guide is re-established
- ◆ To avoid damage to lines/wiring, ensure sufficient clearance to all moving or hot components.

Observe safety measures ⇒ [“2 Safety instructions”, page 3](#) .

Observe rules for cleanliness

⇒ [“3.1 Rules of cleanliness”, page 6](#) .

- Remove air filter housing
⇒ [“3.2 Removing and installing air filter housing”, page 308](#) .

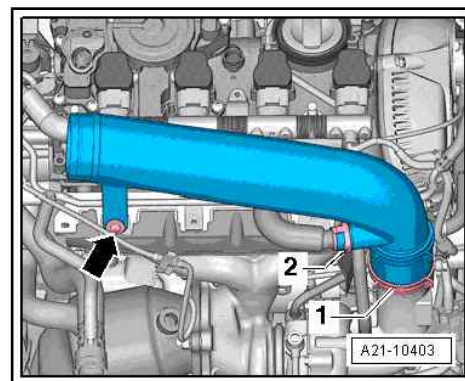
- Press the release buttons and remove pipe -2- for crankcase ventilation.
- Unscrew screw -arrow-.
- Loosen hose clamp -1- and remove the intake manifold.



Note

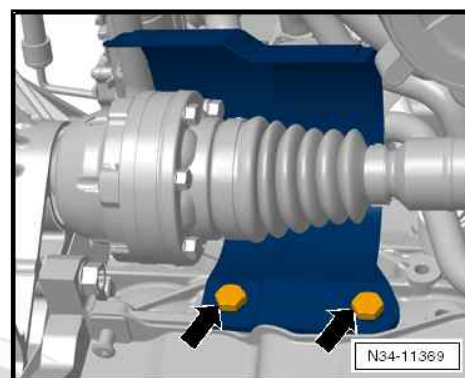
Close inlet connection at exhaust gas turbocharger.

- Before disconnecting the battery, if necessary remove the adapter for the anti-theft wheel bolts from the luggage compartment.
- Remove battery and battery tray ⇒ Electrical System; Rep. gr. 27 .
- Remove the front right wheelhouse liner ⇒ Body Work; Rep. gr. 66 .



Vehicles with front-wheel drive

- Unbolt heat shield for right drive shaft -arrows-.

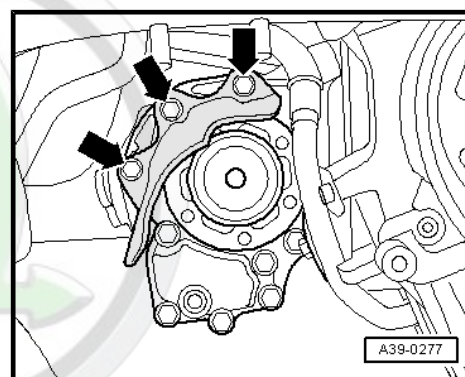


Vehicles with four-wheel drive

- Remove bolts on protective cap for drive shaft

Continued for all vehicles

- Remove right drive shaft ⇒ Chassis; Rep. gr. 40



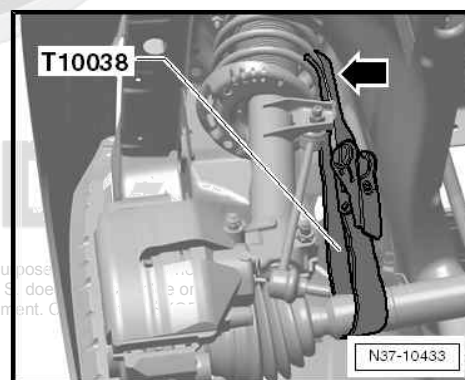
- Unscrew left drive shaft from the flange shaft of the gearbox and where possible tie up.
- Remove pre-exhaust pipe
⇒ ["1.5 Removing and installing pre-exhaust pipe", page 335](#) .

Vehicles with four-wheel drive

- Remove propshaft ⇒ Gearbox; Rep. gr. 39 .

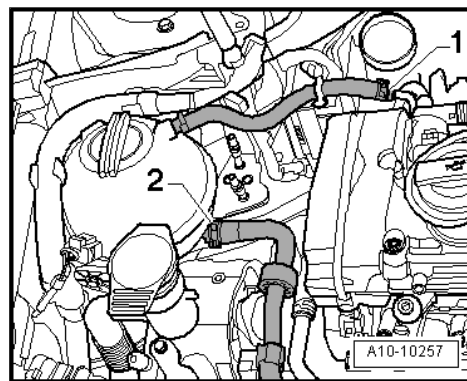
Continued for all vehicles

- Removing fan shroud
⇒ ["4.1 Removing and installing fan shroud for radiator fan V7 and V35", page 207](#) .
- Drain coolant ⇒ ["1.3 Draining and filling coolant", page 179](#) .

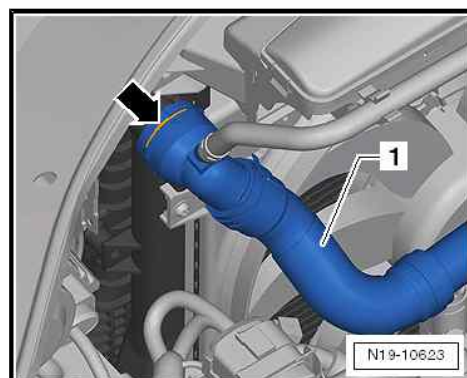




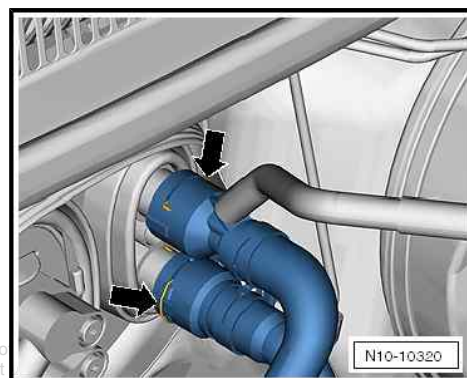
- Detach coolant hoses -1- and -2-.



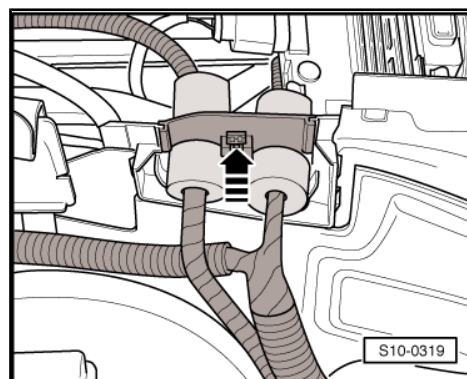
- Remove top coolant hose -1- from the radiator -arrow-.



- Detach the coolant hoses from the heat exchanger -arrows-.
- Disconnect the plug of the engine wiring harness from the engine control unit ➔ ["7 Engine control unit", page 322](#) .

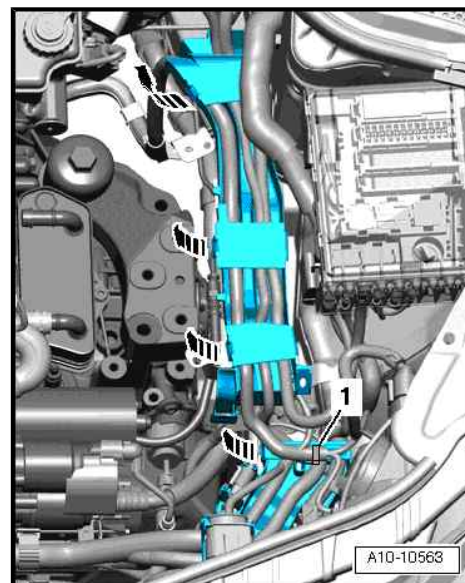


- Release duct for engine wiring harness -arrow- and pull out upwards.
- Expose the left engine wiring harness at the rear on the bulk-head plenum chamber.



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- Open the mounting bracket on the wiring -arrows-.



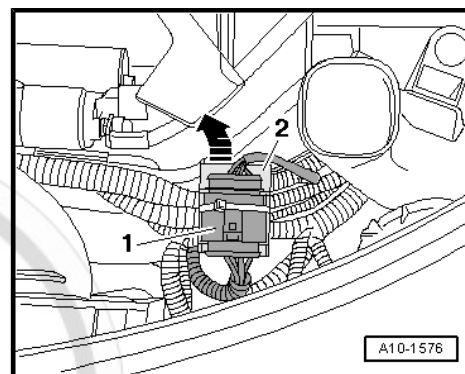
- Expose the plug connection -1- and disconnect it.
- Open the bracket -2- lying below the cable guide.
- Unclip the engine wiring harness to the control unit with the removal tool for the lining of the door panel - T10236- from the wiring.
- Disconnect all connectors for the engine wiring harness/body-shell and place the engine wiring harness down onto the engine.

For vehicles with automatic gearbox

- Remove the selector lever control cable from the gearbox ⇒ Gearbox; Rep. gr. 34 .

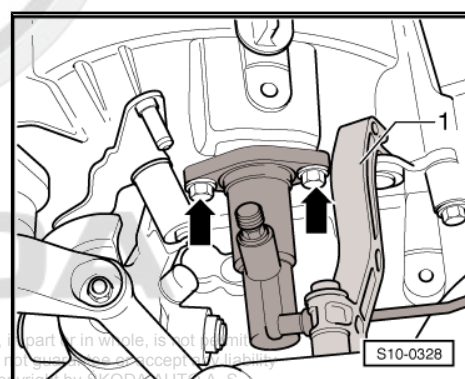
For vehicles with a manual gearbox

- Remove the shift and selector cable with cable support from the gearbox ⇒ Transmission; Rep. gr. 34 .
- Remove strut -1-.
- Remove slave cylinder -arrows- and tie up on side, do not open the wiring system.



NOTICE

After removing the slave cylinder, do not depress the clutch pedal. Doing so may damage the slave cylinder.

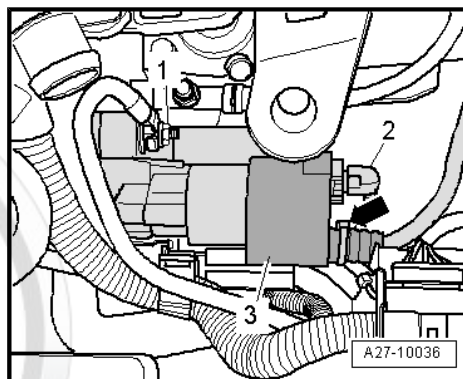


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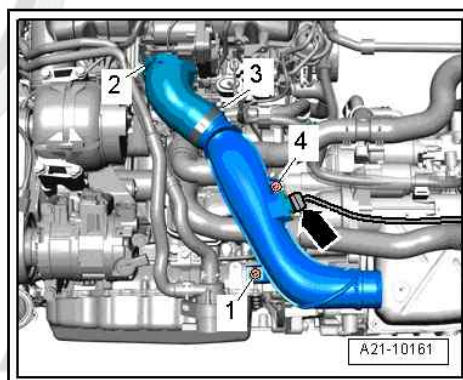


Continued for all vehicles

- Remove the cable strap of the -arrow- protective cover, if present.
- Unbolt earth cable -1-.
- Disconnect plug connection -2-.
- Pull back the protective cover and unscrew the B+ cable from the bracket of the solenoid switch for the starter.

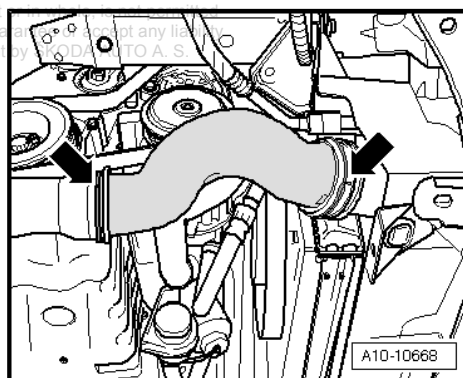


- Loosen hose clamp -2-.
- Remove screw -4-.
- Remove connector -arrow- and expose the electrical cable.
- Unscrew bolt -1- and remove the charge-air pipe by moving it downwards.



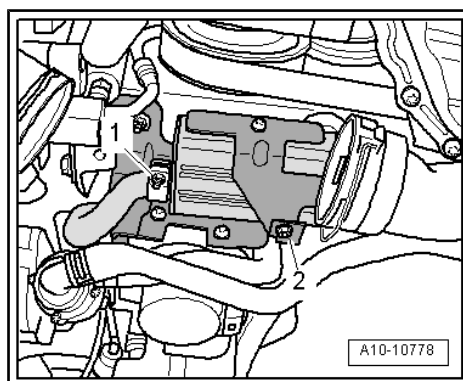
- Remove right charge air hose -arrows-.

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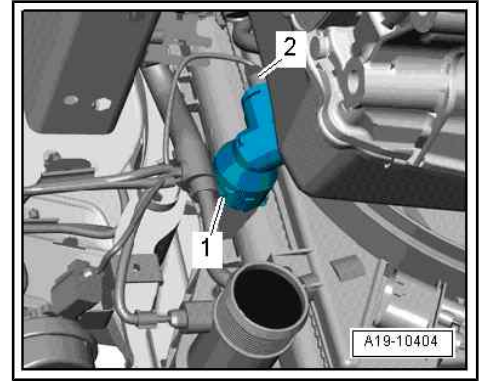
Vehicles with auxiliary heating

- Unscrew clamp -1- and remove screw -2-.
- Remove the muffler for the auxiliary heating.

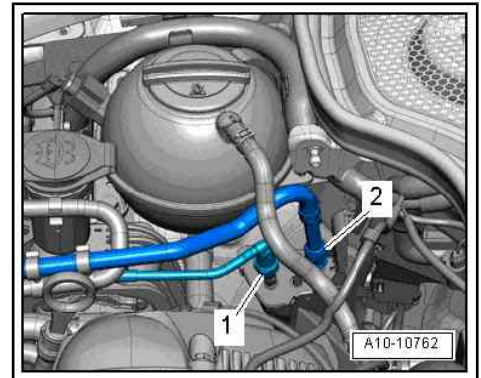


Continued for all vehicles

- Remove the connector -2- for coolant temperature sender at radiator outlet - G83- and remove the coolant additive -1-.

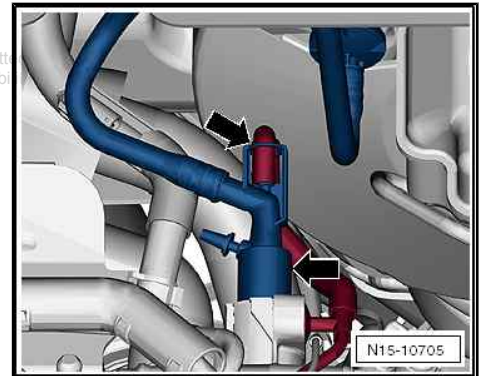


- Remove high pressure pipe -2-
⇒ ["1.3 Separating push-on couplings", page 215](#) .

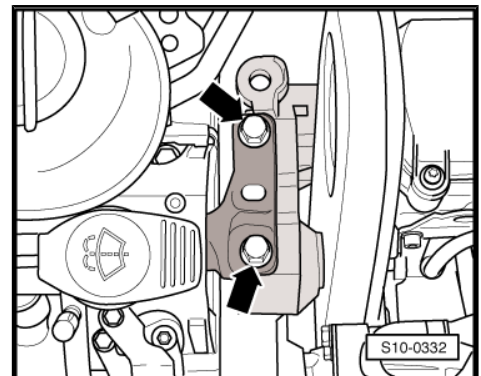


- Detach vacuum hoses -arrows-

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- Remove -arrows- screws on engine mount by less than 1 turn.

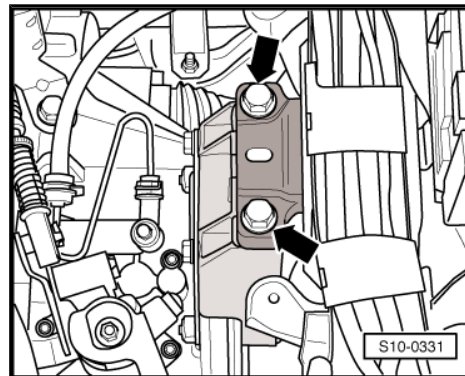


**SKODA**

Octavia II 2004 ➤ , Octavia II 2010 ➤ , Superb II 2008 ➤ , Superb II 20 ...

1.8/112; 118 kW; 2.0/147 kW TSI engine - Edition 06.2019

- Remove-arrows- screws on gearbox mount by less than 1 turn.
- Remove V-ribbed belt
⇒ [“1.2 Removing and installing V-ribbed belt”, page 31](#) .



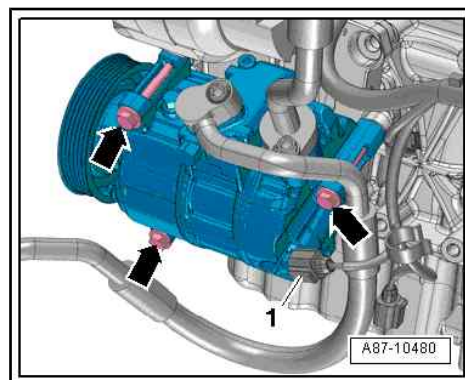
- Disconnect the plug -1- at the AC compressor regulating valve - N280- .

**CAUTION****Risk of injury through refrigerant.**

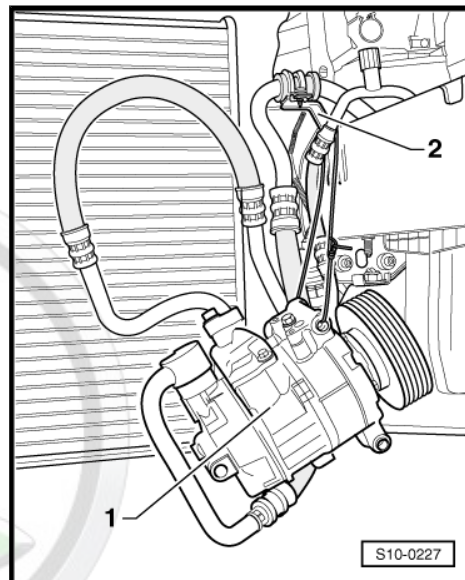
- ◆ Do not open the refrigerant circuit of the air conditioning system.

**NOTICE****Risk of damaging refrigerant lines and hoses.**

- ◆ Do not over-tension, buckle or bend refrigerant lines and hoses.



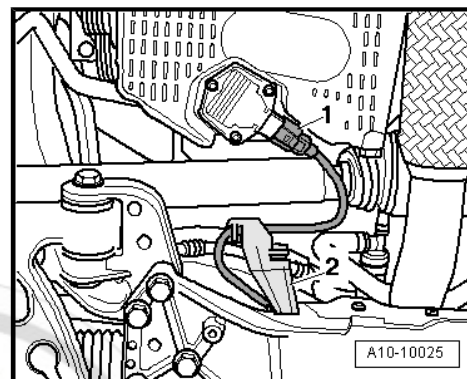
- Release screws -arrows- for AC compressor.
- Secure the AC compressor -1- to the mounting bracket of the longitudinal beam -2- as shown.



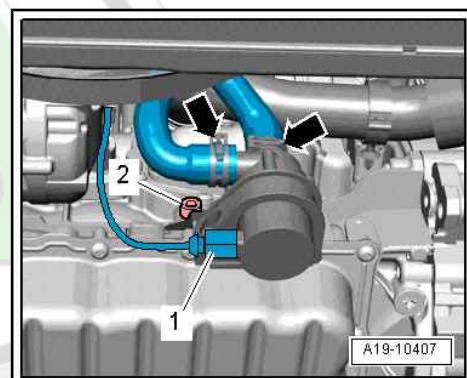
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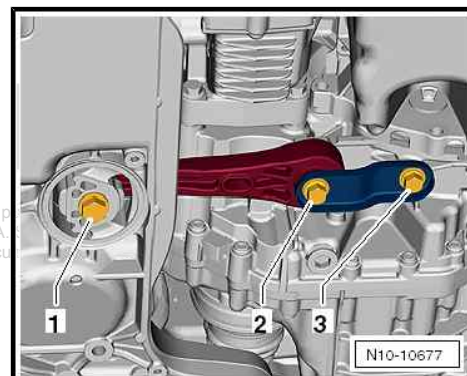
- Disconnect plug -1- for oil level and oil temperature sender - G266- .
- Unclip the mounting bracket -2- for the electrical cable to the oil level and oil temperature sender - G266- at the assembly bracket.
- Remove/unclamp all other necessary electrical cables from the engine/gearbox unit, and expose them.
- Unclamp all connecting, coolant, vacuum and suction hoses from the engine.



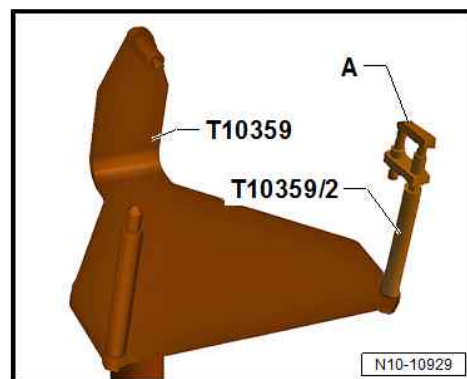
- Unscrew the bolt -2- at the mounting bracket of the coolant recirculation pump - V51- .



- First, unscrew the screw -1-.
- Then unscrew screws -2- and -3- and remove the pendulum support.



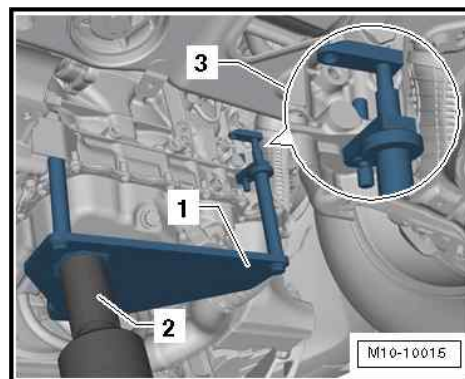
- At the engine mount, screw bolt -T10359/2- with securing element -A- from the gearbox mount - 3282- .



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- Fit engine mount -T10359- -1- to the engine.
- Fix securing element -3- to avoid slipping of the engine from the mount.



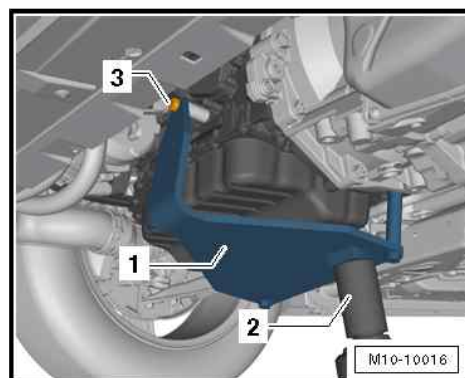
- Tighten engine mount -T10359- -1- with bolt -3- to the cylinder block to 20 Nm.



Note

The threaded bore for the bolt -3- is used to tighten the coolant recirculation pump - V51- .

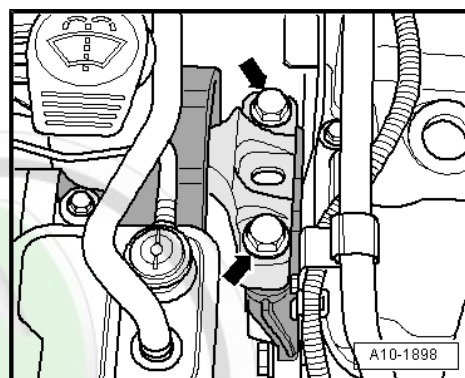
- Raise the engine/gearbox unit slightly.



Note

Use the double ladder to unscrews the screws for the assembly bracket.

- Release the screws -arrows- of the assembly bracket at the engine.



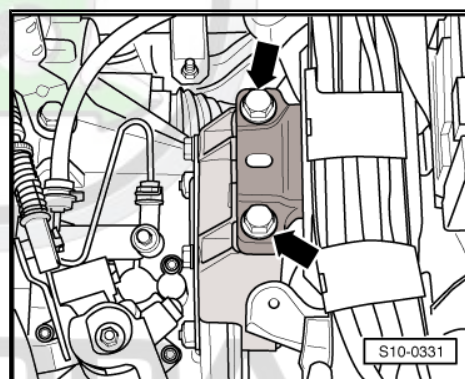
- Release the bolts -arrows- of the assembly bracket at the gearbox.



Note

- ♦ *Check whether all hose and line connections between engine, gearbox and body are released.*
- ♦ *When lowering carefully guide the engine/gearbox assembly, in order to avoid damage.*

- Lower the engine/gearbox assembly with the help of a 2nd mechanic.



When lowering it, pay close attention to the constrictions “AC compressor”, “butterfly valve” and “turbocharger”.

Lower the engine/gearbox unit somewhat, then pull forward as far as possible to the front, turn to the left, and lower further.

1.2 Disconnecting engine and gearbox

Special tools and workshop equipment required

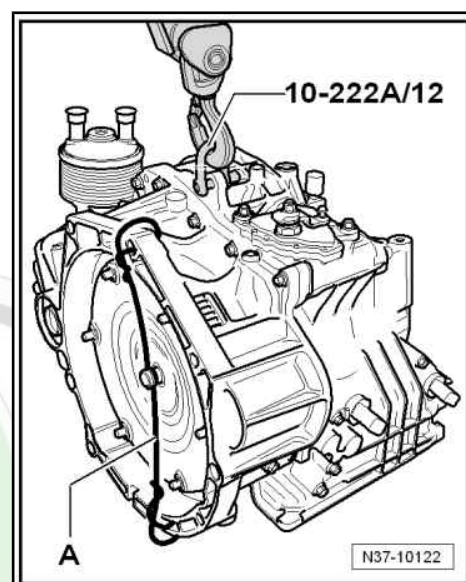
- ◆ Workshop crane , e.g. -VAS 6100-
- ◆ Shackle - 10-222A/12-
- Engine/gearbox unit removed and attached to engine mount - T10359- .
- Remove starter ⇒ Electrical System; Rep. gr. 27 .
- Install shackle - 10-222A/12- on gearbox.
- Hook shackles - 10-222A/12- on the workshop crane - VAS 6100- .



Note

Pre-load the workshop crane - VAS 6100- slightly, but do not raise the gearbox.

- Unscrew engine/gearbox connecting screws ⇒ Gearbox; Rep. gr. 34
- Remove the gearbox from the engine.



1.3 Securing the engine to the assembly stand

Special tools and workshop equipment required

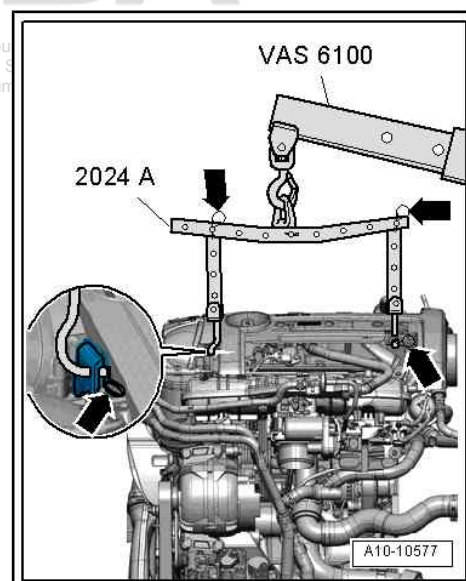
- ◆ Lifting device - MP9-201 (2024A)-
- ◆ Engine and gearbox mount - VAS 6095-
- ◆ Workshop crane, e.g. - VAS 6100-
- Gearbox disconnected from engine
⇒ ["1.2 Disconnecting engine and gearbox", page 17](#) .
- Suspend lifting device - MP9-201 (2024A)- from the engine and workshop crane - VAS 6100- as shown in the illustration.
- For coordination with the unit centre of gravity position the perforated rails must be placed as shown in the illustration.
- The suspension hooks and locking pins on the lifting device must be secured with plug-in locks -arrows-.



CAUTION

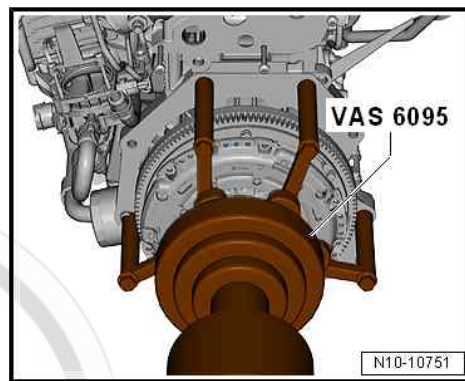
There is a risk of accident from loose parts of the lifting device.

- Lift engine with installed engine mount T10359 off the engine/gearbox jack - V.A.G 1383 A- with workshop crane - VAS 6100- .
- Remove engine mount T10359 .





- Secure engine the gearbox side on engine and gearbox mount
- VAS 6095- as shown in the illustration.



1.4 Installing engine

The installation occurs in reverse order. However, pay attention to the following:



NOTICE

When undertaking all installation work, particularly in the engine compartment because of its cramped construction, please observe the following:

- ◆ Lay lines of all kinds (for example, for fuel, hydraulic fluid, activated charcoal filter, cooling fluid and refrigerant, brake fluid, vacuum) and electrical lines in such a way that the original line guide is re-established.
- ◆ To avoid damage to lines/wiring, ensure sufficient clearance to all moving or hot components.



Note

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- ◆ *All cable straps should be fastened again in the same place when installing.*
- ◆ *Secure all hose connections with hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*
- ◆ *When performing installation, replace the self-locking nuts.*
- ◆ *Replace screws which have been tightened to a torquing angle as well as sealing rings and seals.*
- ◆ *Clean the serration of the driveshaft and, for used driven plate assemblies, clean the hub, remove corrosion, and only apply a very thin layer of grease - G 000 100- onto the serration. Then move clutch plate to and fro on input shaft until hub moves freely on shaft. Remove all excess grease.*

Observe safety measures ⇒ [“2 Safety instructions”, page 3](#) .

Observe rules for cleanliness

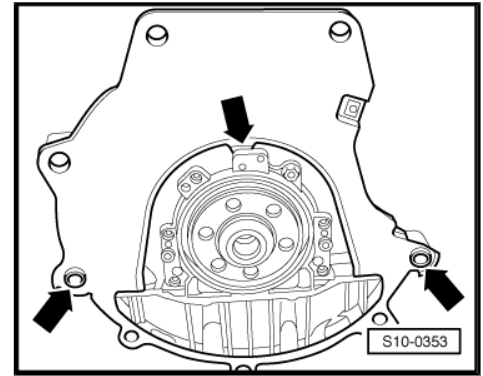
⇒ [“3.1 Rules of cleanliness”, page 6](#) .

- Insert new dowel sleeves for centering the engine/transmission into the cylinder block.

Ensure that the intermediate plate has been inserted on the sealing flange and is pushed onto the dowel sleeves -arrows-.

For vehicles with a manual gearbox

- Check the centering of the clutch disc ⇒ Gearbox; Rep. gr. 30 .
- Check clutch release bearing for wear and renew if necessary.
- Checking and installing clutch and clutch control.
- Apply a thin film of grease - G 000 100- to the drive shaft.



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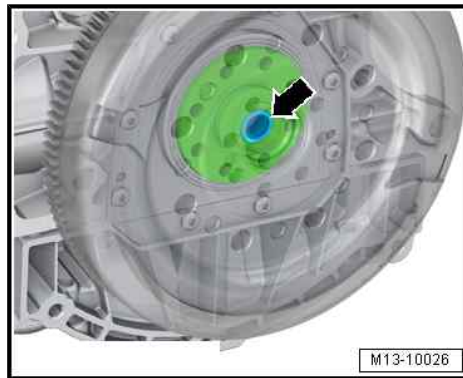


For vehicles with automatic gearbox

- Replace the needle bearing -arrow- in the crankshaft
⇒ [“3.3 Replace the needle bearing in the crankshaft”, page 55](#) .
- Attach the selector lever control cable at the gearbox ⇒ Gearbox; Rep. gr. 34 .

Continued for all vehicles

- Screw on gearbox to engine ⇒ [page 21](#) .
- When installing the engine/gearbox assembly, ensure clearance to the assembly carrier and the radiator.
- When swivelling the unit, ensure clearance to the drive shaft.
- Rock engine to align engine mountings stress-free.



Note

- ◆ *Checking and adjusting the assembly bracket*
⇒ [“2.2 Check assembly bracket setting”, page 23](#) .
- ◆ *Specified torques for assembly mountings*
⇒ [“2.1 Summary of components - assembly mountings”, page 22](#) .
- Install pendulum support
⇒ [“2.1 Summary of components - assembly mountings”, page 22](#) .
- Install drive shafts ⇒ Chassis; Rep. gr. 40 .
- Install AC compressor ⇒ Heating, Air Conditioning; Rep. gr. 87 .
- Install the V-ribbed belt
⇒ [“1.2 Removing and installing V-ribbed belt”, page 31](#) .
- Install slave cylinder ⇒ Gearbox; Rep. gr. 30 .
- Attach shift mechanism and adjust if necessary ⇒ Gearbox; Rep. gr. 34 .
- Insert the plug of the engine wiring harness onto the engine control unit ⇒ [“7 Engine control unit”, page 322](#) .
- Install pre-exhaust pipe
⇒ [“1.5 Removing and installing pre-exhaust pipe”, page 335](#) .

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Vehicles with four-wheel drive

- Install propshaft ⇒ Gearbox; Rep. gr. 39 .

Continued for all vehicles

- Install the battery and pay attention to the necessary work after re-connecting the battery ⇒ Electrical System; Rep. gr. 27 .
- Top up coolant
⇒ [“1.3 Draining and filling coolant”, page 179](#) .
- Interrogate event memory and erase ⇒ Vehicle diagnostic tester.

Tightening torques - summaries of components



Note

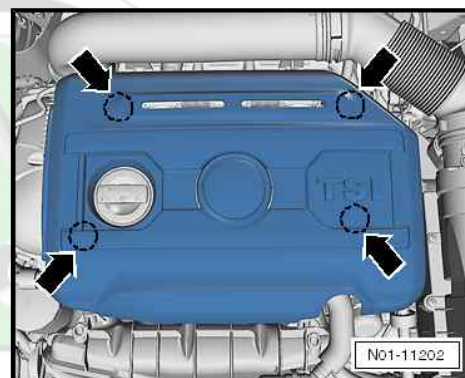
Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

Component		Nm
Screws/nuts	M6	9
	M7	13
	M8	20
	M10	40
	M12	70
deviations:		
Engine/gearbox connecting screws ⇒ Gearbox; Rep. gr. 34		
Screws for assembly bracket ⇒ "2.1 Summary of components - assembly mountings" , page 22 .		

1.5 Removing and installing engine trim panel

Removing

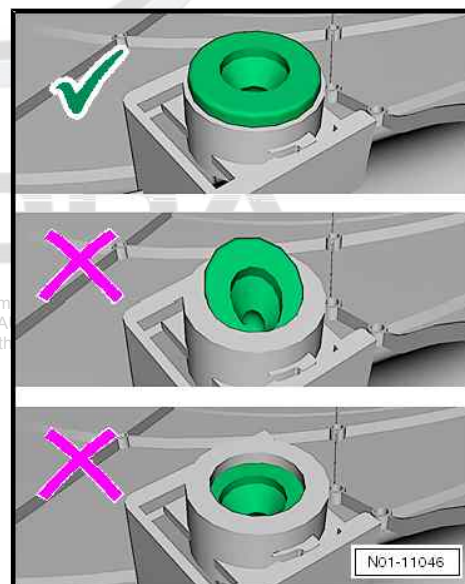
- Detach the engine trim panel from the attachment points -arrows- upwards.



Installing

Ensure that the rubber bearing is correctly inserted in the supports.

- Carefully position the engine cover onto the fixing points and press it in until it clicks into place.



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2 Assembly bracket

⇒ [“2.1 Summary of components - assembly mountings”, page 22](#)

⇒ [“2.2 Check assembly bracket setting”, page 23](#)

⇒ [“2.3 Adjusting the unit mounting”, page 24](#)

2.1 Summary of components - assembly mountings



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

1 - Engine support bracket

2 - Screw

- ☐ Replace after disassembly
- ☐ 40 Nm + 180°

3 - Engine mounting

4 - Screw

- ☐ Replace after disassembly
- ☐ 40 Nm + 90°

5 - Connecting piece

6 - Screw

- ☐ Replace after disassembly
- ☐ 20 Nm + 90°

7 - Screw

- ☐ Replace after disassembly
- ☐ 20 Nm + 90°

8 - Screw

- ☐ Replace after disassembly
- ☐ 40 Nm + 90°

9 - Screw

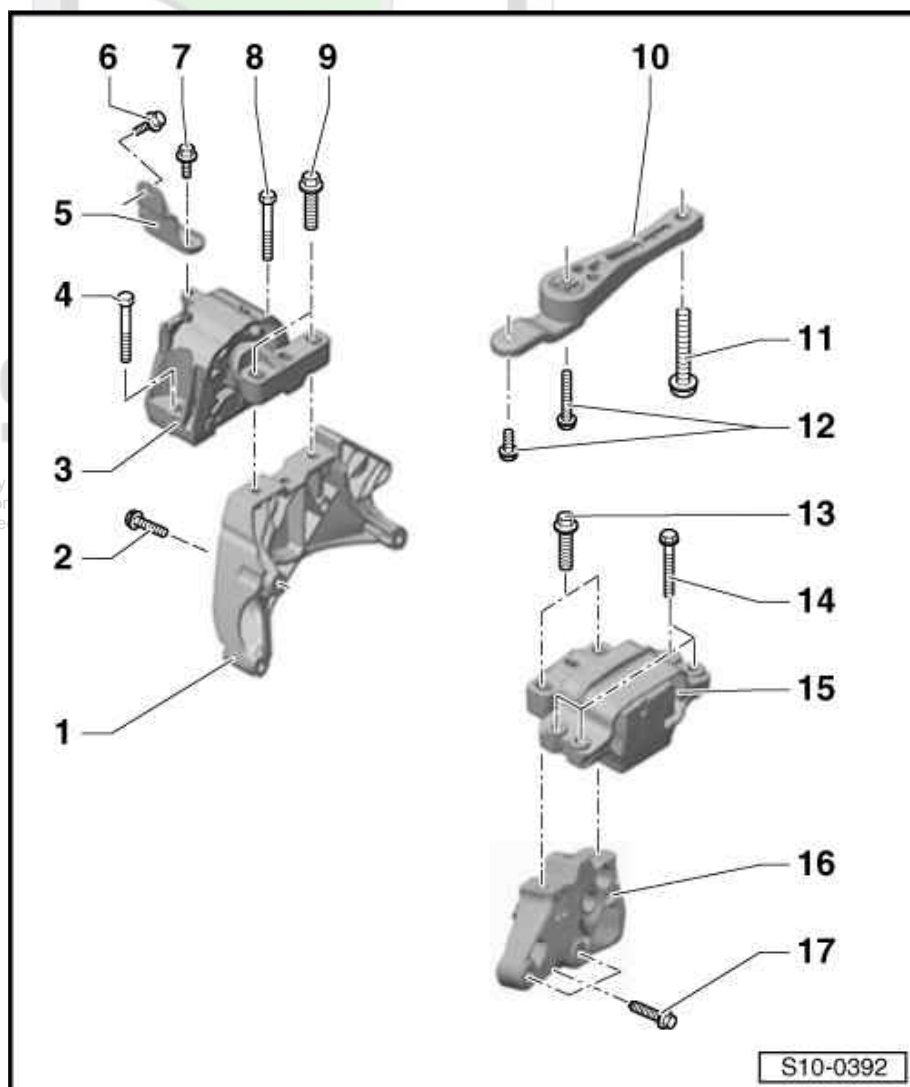
- ☐ Replace after disassembly
- ☐ 60 Nm + 90°

10 - Pendulum support

- ☐ Removing: First remove screw -11-, then screws -12-.
- ☐ Installing: First tighten screws -12-, then screw -11-.

11 - Screw

- ☐ Replace after disassembly
- ☐ 100 Nm + 90°



12 - Screws

- ☐ Replace after disassembly
- ☐ on manual gearbox MQ350 (02Q) check if threaded inserts (for example, Heli-Coil), have been installed in the thread
⇒ Fig. [“Shoulder on the first thread when threaded insert is built in \(for example, Heli Coil\)”](#), page 23
- ☐ if threaded inserts are not installed, they must be subsequently installed (Part No. 02Q.301.561), otherwise there is the risk of the threads shearing
- ☐ 50 Nm + 90°

13 - Screws

- ☐ Tightening torque ⇒ Gearbox; Rep. gr. 34

14 - Screws

- ☐ Replace after disassembly
- ☐ 40 Nm + 90°

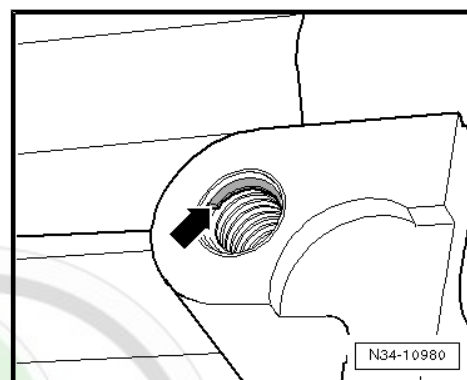
15 - Gearbox mount

16 - Gearbox support bracket

17 - Screw

- ☐ Tightening torque ⇒ Gearbox; Rep. gr. 34

Shoulder on the first thread when threaded insert is built in (for example, Heli Coil)



2.2 Check assembly bracket setting

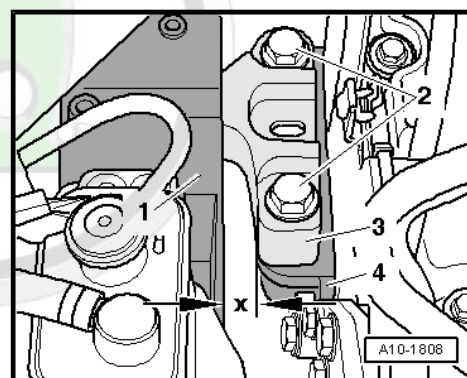
The following dimensions must be reached:

- Screw heads -2- must be parallel to the edge of the supporting arm for the engine bracket -3-.
- Between the engine bracket -1- and engine support -4- there should be a distance -x- = 10... 13 mm.



Note

The distance -x- can be checked, for example with suitable round bars.



If the measured distance is too great or too small, adjust the assembly bracket:

- ◆ Octavia II, Yeti
⇒ [“2.3.1 Adjusting the assembly mountings, Octavia II, Yeti”](#), page 24 .
- ◆ Superb II
⇒ [“2.3.2 Setting the assembly bracket, Superb II”](#), page 26 .

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2.3 Adjusting the unit mounting

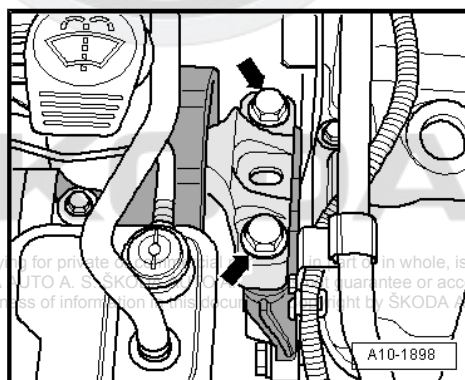
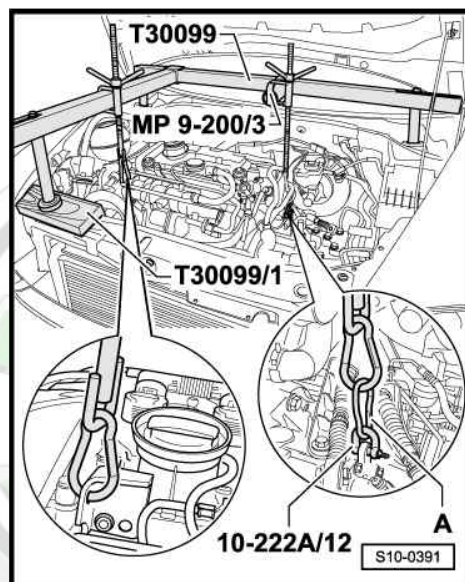
⇒ "2.3.1 Adjusting the assembly mountings, Octavia II, Yeti", page 24

⇒ "2.3.2 Setting the assembly bracket, Superb II", page 26

2.3.1 Adjusting the assembly mountings, Octavia II, Yeti

Special tools and workshop equipment required

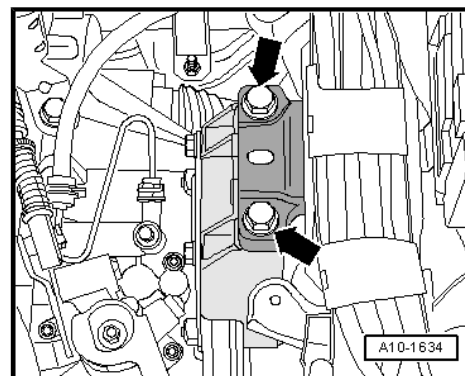
- ◆ Supporting device - T30099-
 - ◆ Thrust washer - T30099/1-
 - ◆ Adapter - MP9-200/3 (10-222A/3)-
 - ◆ Shackle - 10-222A/12-
 - ◆ Snap hook
 - Remove battery and battery tray ⇒ Electrical System; Rep. gr. 27 .
 - Remove plenum chamber cover ⇒ Body Work; Rep. gr. 66 .
 - Fit supporting device - T30099- with surface - T30099/1- and support engine in fitting position.
 - Uniformly pre-tension the engine/gearbox unit with both spindles, but do not raise.
-
- Unscrew screws -arrows- for engine mount one after another and replace (if not already done during engine installation).
 - Firstly, loosely insert the screws.



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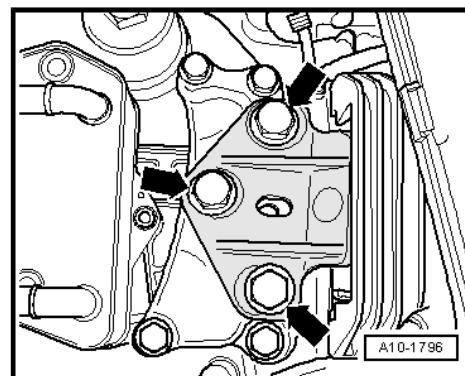
Gearbox mount with 2 screws

- Unscrew screws -arrows- for gearbox mount one after another and replace (if not already done during engine installation).
- Firstly, loosely insert the screws.



Gearbox mount with 3 screws

- Unscrew screws -arrows- for gearbox mount one after another and replace (if not already done during engine installation).
- Firstly, loosely insert the screws.



Continued for all vehicles

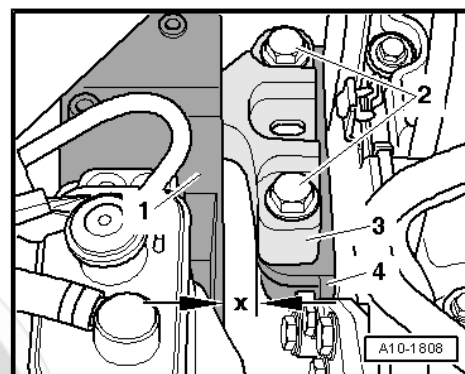
- Move the engine/gearbox assembly with an assembly lever between engine support -4- and supporting arm -3- until the following dimensions are set:
- Screw heads -2- must be parallel to the edge of the supporting arm for the engine bracket -3-.
- A distance of -x- = 10 mm must be present between engine support -1- and engine mount -4-.



Note

The distance -x- can be checked, for example with suitable round bars.

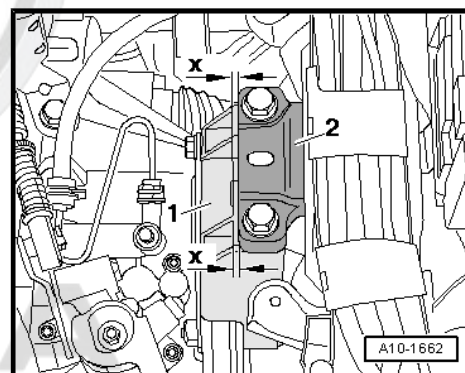
- Tighten screws for engine mount.



Gearbox mount with 2 screws

Make sure that the edges of the supporting arm of the gearbox sides -2- and the gearbox support -1- are parallel.

- The dimension -x- must be the same on both sides.





Gearbox mount with 3 screws

Make sure that the edges of the supporting arm of the gearbox sides -1- and the gearbox mount -2- are parallel.

- The dimension -x- must be the same on both sides.

Continued for all vehicles

- Tighten gearbox mount screws.

The installation occurs in reverse order.

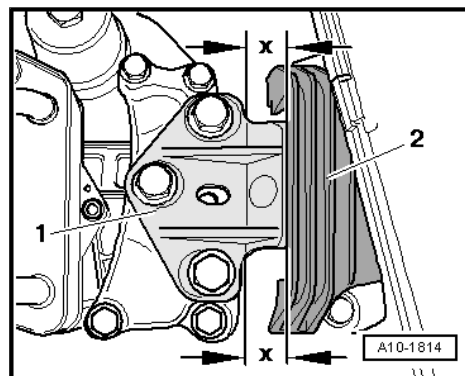
Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ♦ Assembly bracket
⇒ ["2.1 Summary of components - assembly mountings", page 22](#).

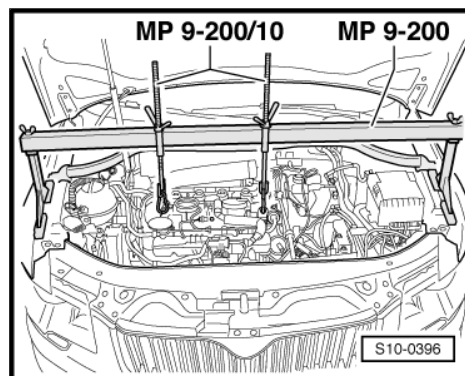


2.3.2 Setting the assembly bracket, Superb II

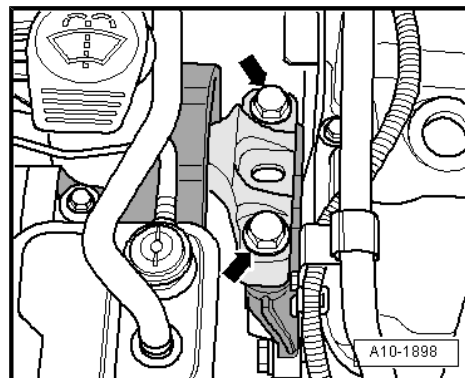
Special tools and workshop equipment required

- ♦ Supporting device - MP9-200 (10-222A)- Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted without the written permission of ŠKODA AUTO A. S. ŠKODA AUTO A. S. does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by ŠKODA AUTO A. S.
- ♦ Hook - MP9-200/10 (10-222A/10)-

- Remove battery and battery tray ⇒ Electrical System ⇒ Rep. gr. 27 .
- Fit supporting device - MP9-200 (10-222A)- and support engine with 2 hooks - MP9-200/10 (10-222A/10)- to the lifting eyes in the in the fitting position.
- Uniformly pre-tension the engine/gearbox unit with both spindles, but do not raise.

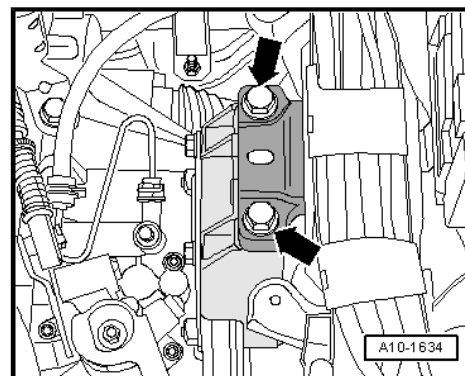


- Unscrew screws -arrows- for engine mount one after another and replace (if not already done during engine installation).
- Firstly, loosely insert the screws.



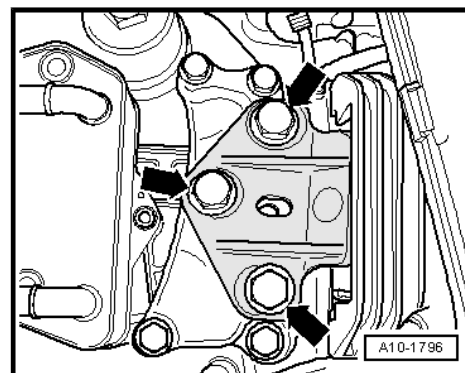
Gearbox mount with 2 screws

- Unscrew screws -arrows- for gearbox mount one after another and replace (if not already done during engine installation).
- Firstly, loosely insert the screws.



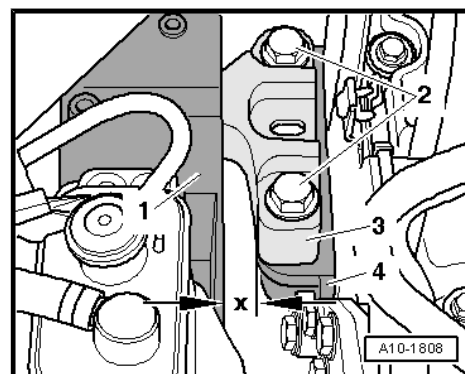
Gearbox mount with 3 screws

- Unscrew screws -arrows- for gearbox mount one after another and replace (if not already done during engine installation).
- Firstly, loosely insert the screws.



Continued for all vehicles

- Move the engine/gearbox assembly with an assembly lever between engine support -4- and supporting arm -3- until the following dimensions are set:
- Screw heads -2- must be parallel to the edge of the supporting arm for the engine bracket -3-.
- A distance of -x- = 10 mm must be present between engine support -1- and engine mount -4-.



Note

The distance -x- can be checked, for example with suitable round bars.

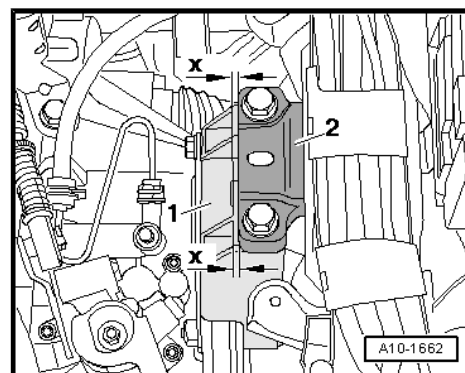
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- Tighten screws for engine mount.

Gearbox mount with 2 screws

Make sure that the edges of the supporting arm of the gearbox sides -2- and the gearbox support -1- are parallel.

- The dimension -x- must be the same on both mount sides.





Gearbox mount with 3 screws

Make sure that the edges of the supporting arm of the gearbox sides -1- and the gearbox mount -2- are parallel.

- The dimension -x- must be the same on both sides.

Continued for all vehicles

- Tighten gearbox mount screws.

The installation occurs in reverse order.

Tightening torques - summaries of components

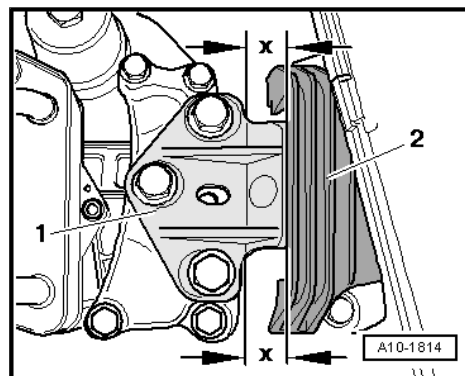


Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Assembly bracket

⇒ ["2.1 Summary of components - assembly mountings", page 22](#).



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13 – Crankshaft group

1 Cylinder block - Belt pulley side

⇒ [“1.1 Assembly overview - V-ribbed belt drive”, page 29](#)

⇒ [“1.2 Removing and installing V-ribbed belt”, page 31](#)

⇒ [“1.3 Removing and installing tensioning pulley for V-ribbed belt”, page 32](#)

⇒ [“1.4 Removing and installing bracket for auxiliary units”, page 35](#)

⇒ [“1.5 Removing and installing vibration dampener”, page 37](#)

1.1 Assembly overview - V-ribbed belt drive



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

1 - Crankshaft V-ribbed belt pulley

- ☐ with vibration damper
- ☐ Removing and installing
⇒ [“1.5 Removing and installing vibration dampener”, page 37](#)

2 - O-ring

- ☐ replace

3 - Screw

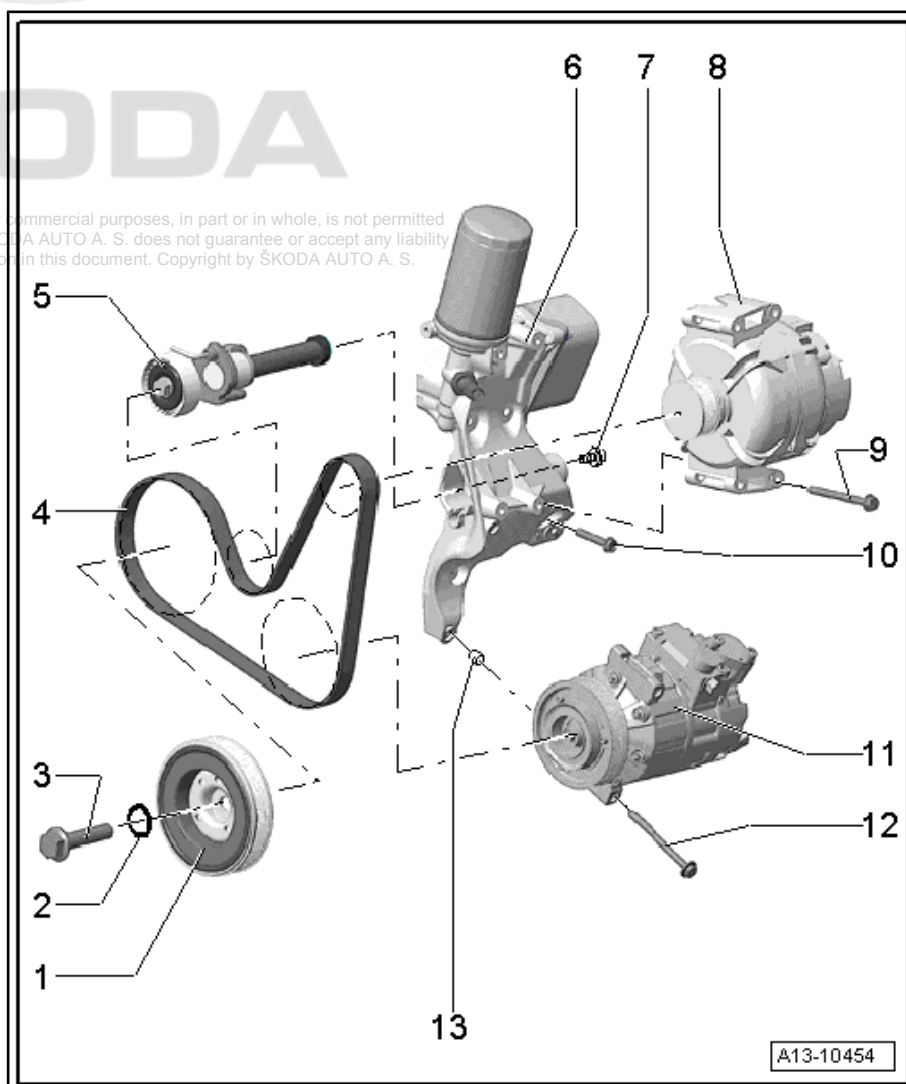
- ☐ Replace after disassembly
- ☐ to release and tighten use counterholder - T10355-
- ☐ 150 Nm + 90°

4 - V-ribbed belt

- ☐ check for wear
- ☐ do not kink
- ☐ pay attention to the correct position on the belt pulley when installing it
- ☐ Removing and installing
⇒ [“1.2 Removing and installing V-ribbed belt”, page 31](#)

5 - Tensioning pulley for V-ribbed belt

- ☐ swivel tensioning device for V-ribbed belt with open-end wrench to slacken the V-ribbed belt





- ☐ lock with locking pin - T10060 A-
- ☐ Individual parts of tensioner pulley for poly V-belt
⇒ Fig. "Individual parts of tensioner pulley for poly V-belt", page 30
- ☐ Removing and installing ⇒ "1.3 Removing and installing tensioning pulley for V-ribbed belt", page 32

6 - Bracket for auxiliary units

- ☐ with oil filter and engine oil cooler
- ☐ Removing and installing bracket for auxiliary units
⇒ "1.4 Removing and installing bracket for auxiliary units", page 35
- ☐ Removing and installing engine oil cooler ⇒ "2.1 Removing and installing engine oil cooler", page 168

7 - Screw

- ☐ 10 Nm

8 - Alternator

- ☐ Removing and installing ⇒ Electrical System; Rep. gr. 27

9 - Screw

- ☐ 23 Nm

10 - Screw

- ☐ Replace after disassembly
- ☐ Tightening torque and tightening order
⇒ Fig. "Bracket for auxiliary units - tightening order", page 31

11 - AC compressor

- ☐ removing and installing ⇒ Heating, Air Conditioning; Rep. gr. 87

12 - Screw

- ☐ 25 Nm

13 - Fitting sleeve

- ☐ for the AC compressor

Individual parts of tensioner pulley for poly V-belt

1 - Screw

- ◆ 60 Nm

2 - Tensioning pulley

- ◆ can be replaced separately

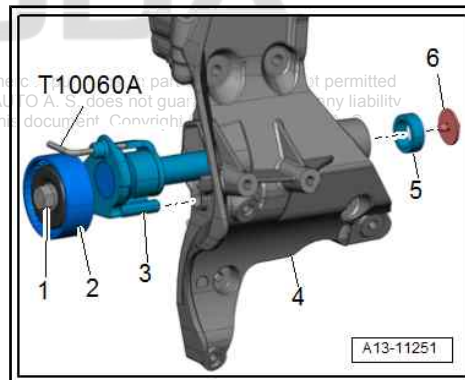
3 - Support piece

4 - Bracket for auxiliary units

5 - Fitting sleeve

6 - Screw

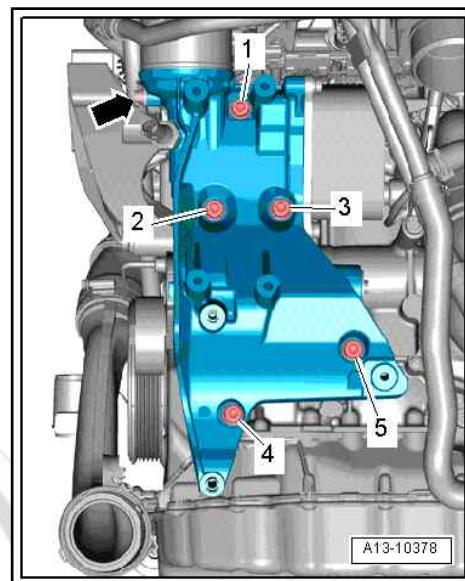
- ◆ Tightening torque ⇒ Item 7 (page 30)



Bracket for auxiliary units - tightening order

- Replace bolts.
- Fit bracket for auxiliary units and initially screw in bolt -4-.
- Tighten screws in 3 steps in the given sequence:

Level	Screws	Tightening torque/torque angle
1	-1- to -5-	Tighten by hand as far as the stop
2	-1- to -5-	20 Nm
3	-1- to -5-	Turn 90° further



1.2 Removing and installing V-ribbed belt

Special tools and workshop equipment required

- ◆ Locking pin - T10060 A-

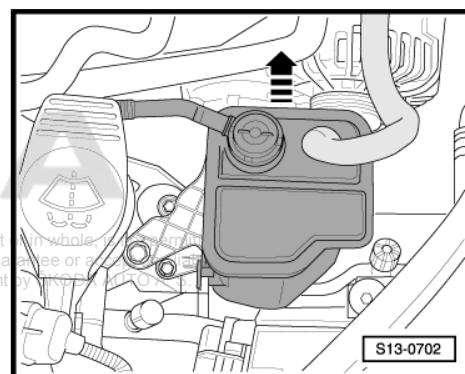
Removing

- Loosen the terminal on the rear side of the activated charcoal reservoir.
- Remove container with its connected hoses upwards from bracket -arrow- and lay to the side.

! NOTICE

There is a risk of destruction through reversing the rotation direction of an already used V-ribbed belt.

- ◆ Mark the direction of rotation with chalk or a felt-tip pen for the re-installation before removing the V-ribbed belt.





- Loosen the V-ribbed belt by swivelling the tensioning pulley in the -direction of the arrow-.
- Lock tensioning pulley with locking pin - T10060 A- .
- Remove the V-ribbed belt.

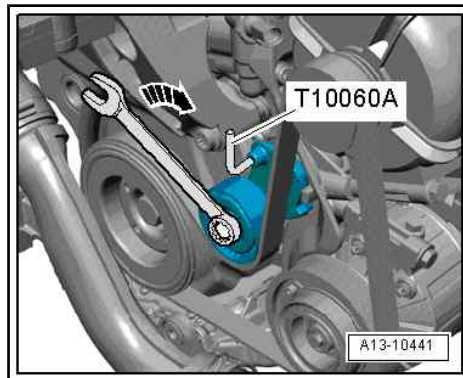
Installing

- The installation occurs in reverse order. However, pay attention to the following:



Note

- ◆ *Before installing the poly V-belt, the generator and the AC compressor must be securely mounted.*
- ◆ *Pay attention to the correct position and rotation direction of the V-ribbed belt in the belt pulley when installing it.*



Generally, after completing work:

- Start engine and check belt run.

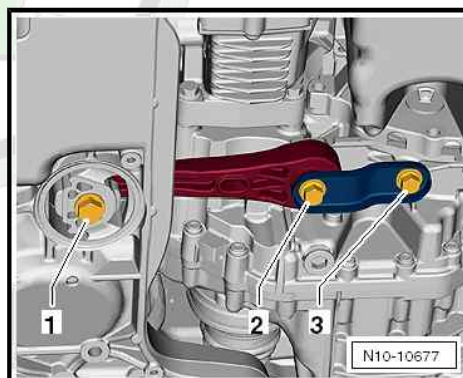
1.3 Removing and installing tensioning pulley for V-ribbed belt

Special tools and workshop equipment required

- ◆ Supporting device - MP9-200 (10-222A)- (Superb II)
- ◆ Support bracket - T30099- (Octavia II and Yeti)
- ◆ Surface - T30099/1- (Octavia II and Yeti)
- ◆ Hook - MP9-200/10 (10-222A/10)-
- ◆ Locking pin - T10060 A-

Removing

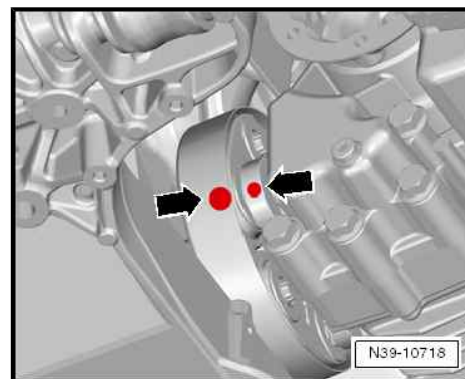
- Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .
- Remove the front right wheelhouse liner ⇒ Body Work; Rep. gr. 66 .
- First, unscrew the screw -1-.
- Unscrew screws -2- and -3- and remove the pendulum support.



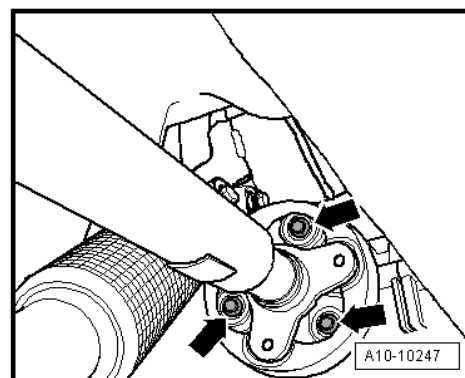
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Vehicles with four-wheel drive

- Mark the position of the propshaft with flexible disk to the output flange of the angle gearbox with colour.
- Secure propshaft with a belt to prevent it from falling.

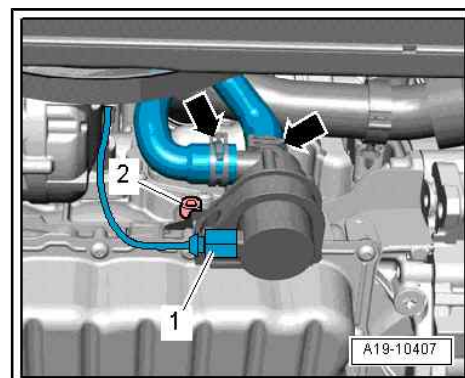


- Unscrew the propshaft from the angle gearbox -arrows- and push off ⇒ Gearbox; Rep. gr. 39 .



Continued for all vehicles

- Unscrew the bolt -2- at the mounting bracket of the coolant recirculation pump - V51- .

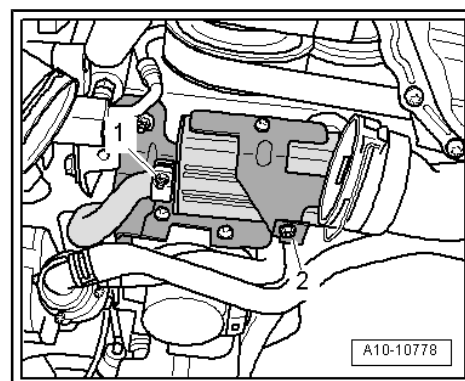


Vehicles with auxiliary heating

- Unscrew clamp -1- and remove screw -2-.
- Remove the muffler for the auxiliary heating.

For vehicles Octavia II and Yeti

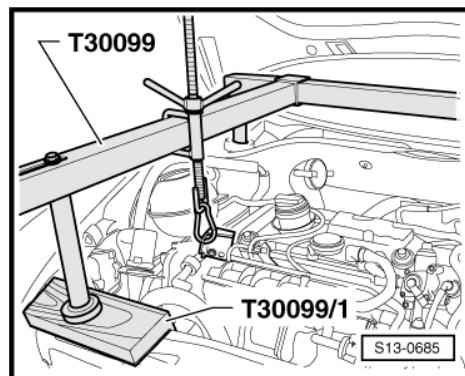
- Remove V-ribbed belt
⇒ [“1.2 Removing and installing V-ribbed belt”, page 31](#) .
- Remove plenum chamber cover ⇒ Body Work; Rep. gr. 66 .



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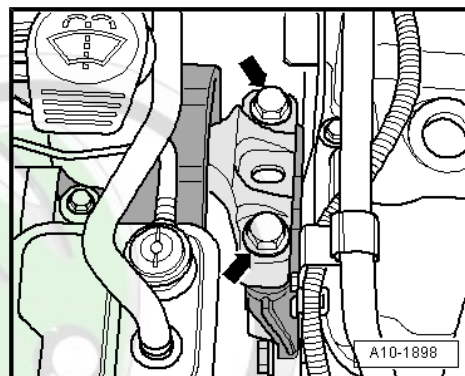
- Fit supporting device - T30099- with surface - T30099/1- and support engine in fitting position.



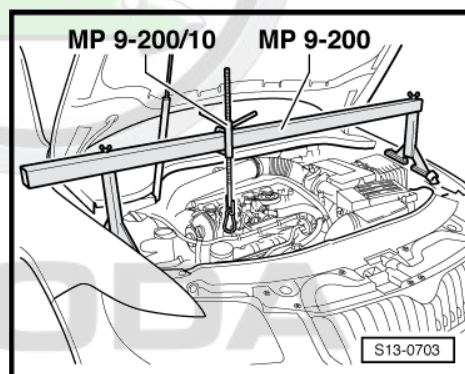
- Release the screws -arrows- of the assembly bracket at the engine.
- Lower the engine by approx. 55 mm (measured at the engine mounting).

For the vehicles Superb II

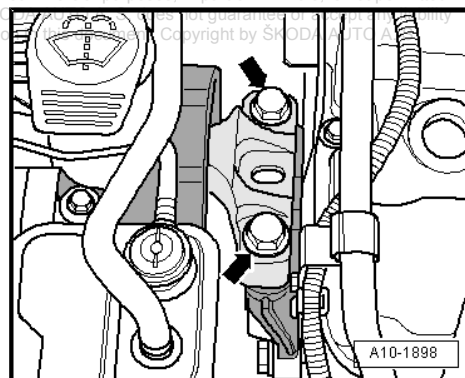
- Remove V-ribbed belt
⇒ [“1.2 Removing and installing V-ribbed belt”, page 31](#) .



- Fit supporting device - MP9-200 (10-222A)- , suspend engine from the right lifting eye with hooks - MP9-200/10 (10-222A/10)- and pre-load using spindles, but do not raise.



- Release the screws -arrows- of the assembly bracket at the engine.
- Lower the engine by approx. 50 mm (measured at the engine mounting).



Continued for all vehicles

- Expose wiring loom -arrows-.
- Release screw -1- and pull off tensioning pulley for poly V-belt from the bracket for the auxiliary units.

Installing

The installation occurs in reverse order. However, pay attention to the following:

- Insert the support piece -3- for the V-ribbed belt tensioning roller into the bracket for auxiliary units -4- and tighten the screw -6-.
- Pay attention to the fitting location of the support piece -3- :
- The Nose of the support piece -3- must be inserted into the hole in the holder for auxiliary units-4-.

Be mindful of the fitting sleeve -5-.

- Install the V-ribbed belt
⇒ [“1.2 Removing and installing V-ribbed belt”, page 31](#) .
- Install pump for coolant recirculation - V51-
⇒ [“2.3 Removing and installing coolant recirculation pump V51”, page 189](#) .
- Adjusting the assembly bracket:
- ◆ Octavia II, Yeti
⇒ [“2.3.1 Adjusting the assembly mountings, Octavia II, Yeti”, page 24](#) .
- ◆ Superb II
⇒ [“2.3.2 Setting the assembly bracket, Superb II”, page 26](#) .

Tightening torques - summaries of components



Note

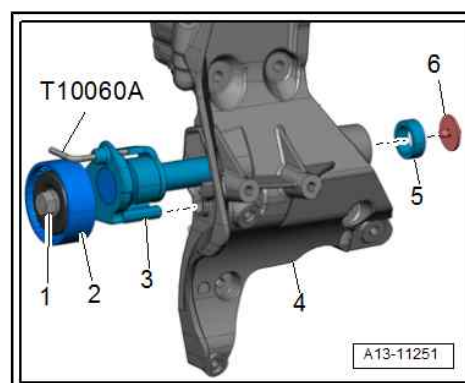
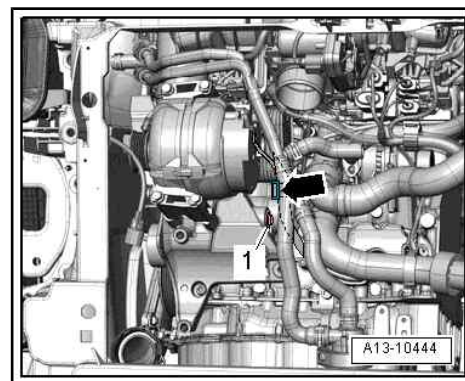
Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Tensioning pulley for V-ribbed belt
⇒ [“1.1 Assembly overview - V-ribbed belt drive”, page 29](#) .
- ◆ Assembly bracket
⇒ [“2.1 Summary of components - assembly mountings”, page 22](#) .
- ◆ Coolant recirculation pump - V51-
⇒ [“2.2 Summary of components - Coolant recirculation pump V51”, page 189](#) .

1.4 Removing and installing bracket for auxiliary units

Removing

- Drain coolant ⇒ [“1.3 Draining and filling coolant”, page 179](#) .
- Remove V-ribbed belt
⇒ [“1.2 Removing and installing V-ribbed belt”, page 31](#) .
- Remove the generator ⇒ Electrical System; Rep. gr. 27 .





- Disconnect connector -1- for magnetic coupling at AC compressor.

⚠ CAUTION

Risk of injury through refrigerant.

- ◆ Do not open the refrigerant circuit of the air conditioning system.

- Release screws -arrows- for AC compressor.

! NOTICE

Risk of damaging refrigerant lines and hoses.

- ◆ Do not over-tension, buckle or bend refrigerant lines and hoses.
- Tie up AC compressor with connected refrigerant hoses to the frame side rail.
- Release screw -arrow- for guide pipe for dipstick.
- Remove screws -1- to -5- and remove bracket for auxiliary units from the coolant pump housing.

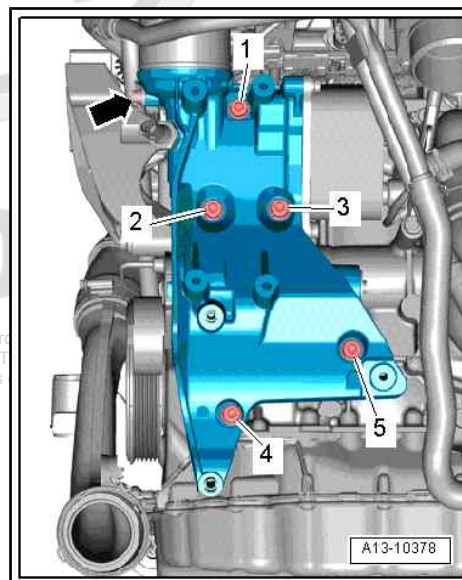
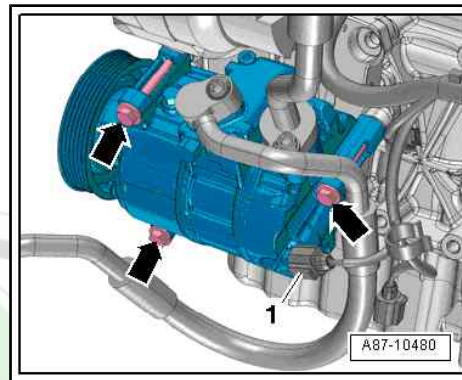
Installing

The installation occurs in reverse order. However, pay attention to the following:

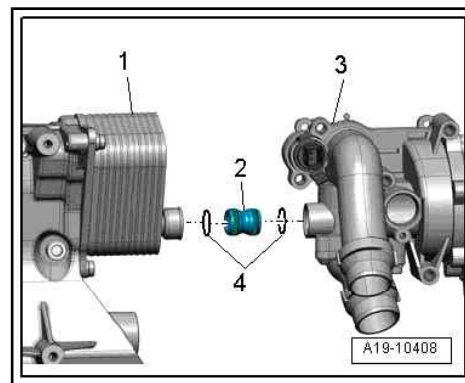


Note

- ◆ Replace screws which have been tightened to a torquing angle.
- ◆ Replace O-rings and gaskets.



- Moisten O-rings -4- with coolant.
- Insert connecting studs -2- into the thermostat housing -3-.
- Slide bracket for auxiliary units -1- onto the connecting studs, fit and then tighten screws
⇒ [Fig. "Bracket for auxiliary units - tightening order"](#), [page 31](#) .
- Installing AC compressor.
- Install generator ⇒ Electrical System; Rep. gr. 27 .
- Install the V-ribbed belt
⇒ ["1.2 Removing and installing V-ribbed belt"](#), [page 31](#) .
- Top up coolant
⇒ ["1.3 Draining and filling coolant"](#), [page 179](#) .



Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Bracket for auxiliary units
⇒ ["1.1 Assembly overview - V-ribbed belt drive"](#), [page 29](#)

1.5 Removing and installing vibration dampener

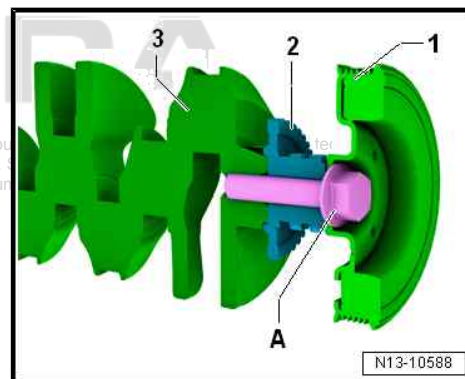
Special tools and workshop equipment required

- ◆ Counterholder - T10355-
- ◆ Assembly tool - T10531-

The fastening screw -A- connects the vibration damper -1-, three-stage sprocket -2- and the crankshaft -3-. Before removing the fastening screw, the three-stage sprocket must be fastened to the crankshaft with the assembly tool - T10531/1- ⇒ [page 39](#) .

Removing

- Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .
- Remove the front right wheelhouse liner ⇒ Body Work; Rep. gr. 66 .

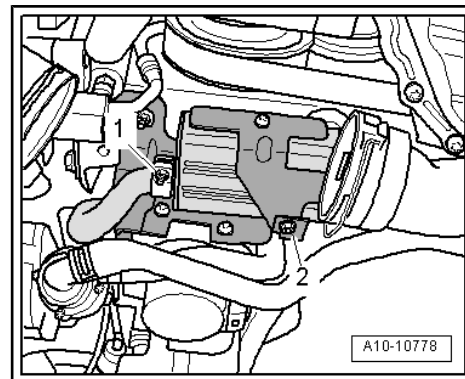


Vehicles with auxiliary heating

- Unscrew clamp -1- and remove screw -2-.
- Remove the muffler for the auxiliary heating.

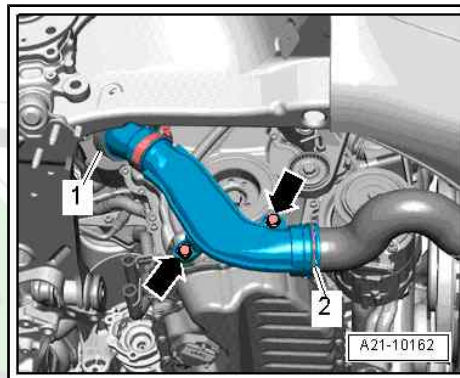
Continued for all vehicles

- Remove V-ribbed belt
⇒ ["1.2 Removing and installing V-ribbed belt"](#), [page 31](#) .

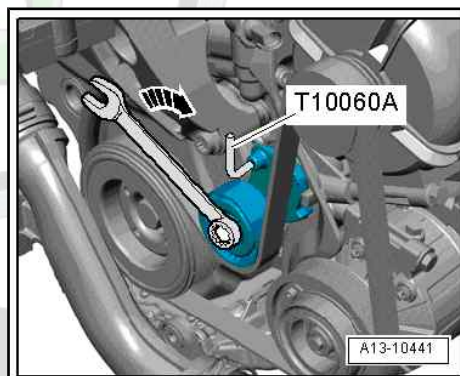




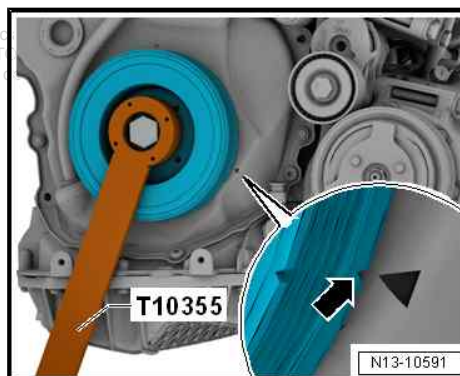
- Remove screws -arrows-.
- Remove charge-air pipe. To do so, remove the terminals -1- and -2-.



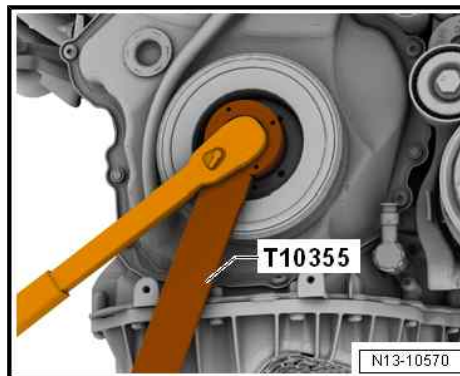
- Remove the locking pin - T10060 A- from the tensioning pulley for V-ribbed belt.



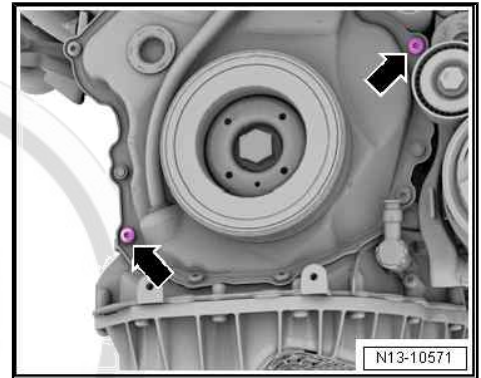
- Turn the V-ribbed belt pulley, crankshaft with the counterholder - T10355- in position "ODT for cylinder 1" -arrow-.
- The notch on the crankshaft V-ribbed belt pulley -arrow- and the marking on the cover for the bottom cover for timing chain must face each other.



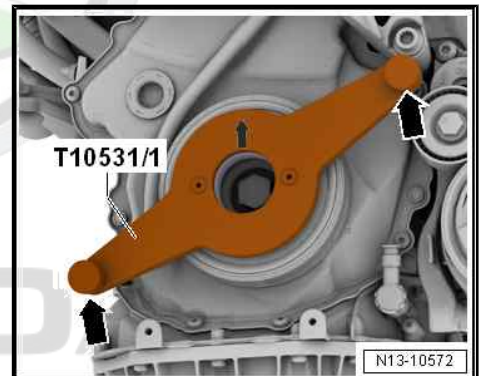
- Undo the screw for the belt pulley by $\frac{1}{2}$ turn with the counterholder - T10355- .
- The belt pulley must be in the OT position.



- Undo the screws -arrows- on the cover of the timing belt.



- Fit the assembly tool - T10531/1- and firmly secure with the hand using knurled screws, as shown in the figure.
- Remove the screw for the V-ribbed belt pulley crankshaft.

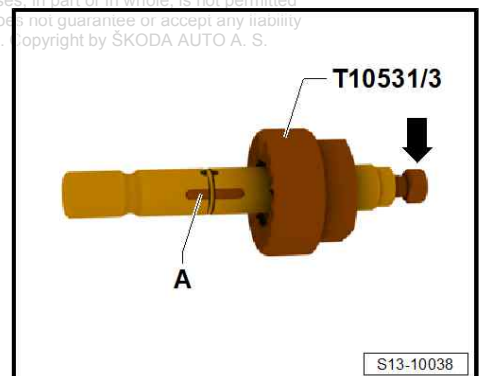


- Check that the assembly tool - T10531/3- can slide loosely over the clamping elements -A-. If necessary, turn with tensioning screw -arrow-.

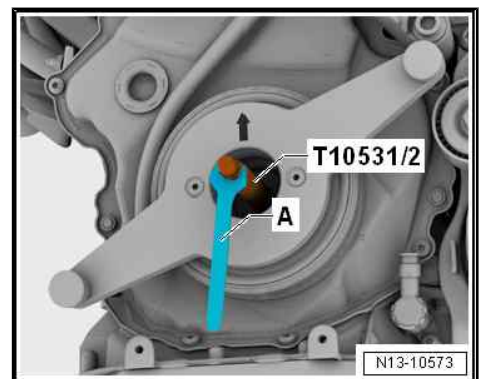


Note

When screwing the assembly tool - T10531/2- into the crankshaft, do not turn with the clamping screw to prevent it from being tilted in the crankshaft.

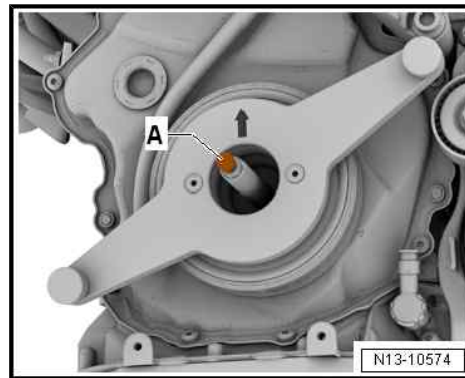


- Screw the assembly tool - T10531/2- into the crankshaft and tighten using the SW12 -A- wrench.

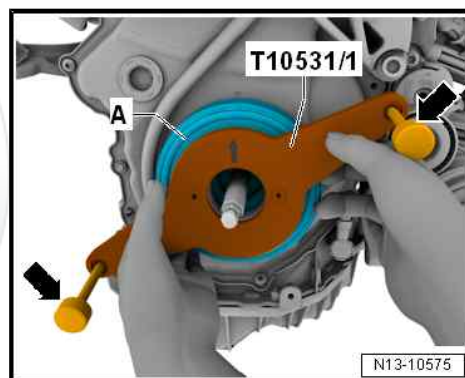




- Tighten the clamping screw -A- by hand. As a result, the chain sprocket is secured to the crankshaft.

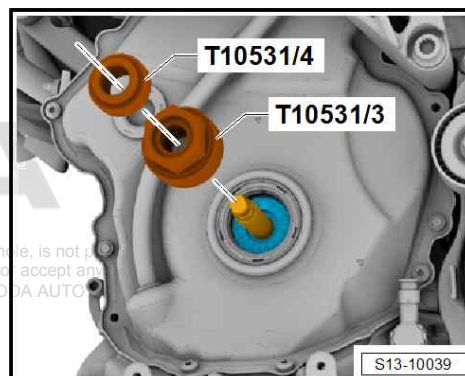


- Unscrew the knurled screws -arrows- and remove the assembly tool - T10531/1- .
- Remove the crankshaft V-ribbed belt pulley -A-.

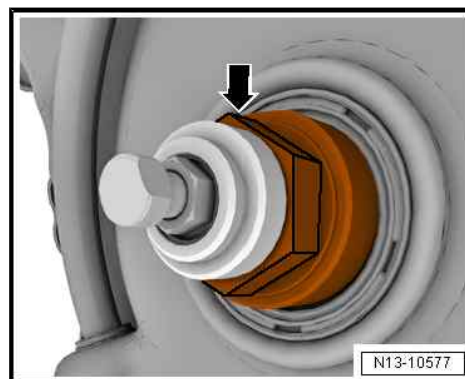


If the crankshaft turns without the belt pulley

- Slide the assembly tool - T10531/3- onto the assembly tool - T10531/2- - when doing so, pay attention to the tooth contour of the chain sprocket.
- The flattened part of the assembly tool - T10531/3- must be upright in the TCD position.
- Position the assembly tool - T10531/4- and tighten by hand.

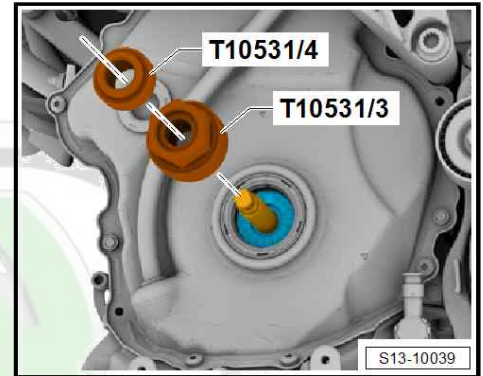


Turn the crankshaft on the hexagon-arrow-.

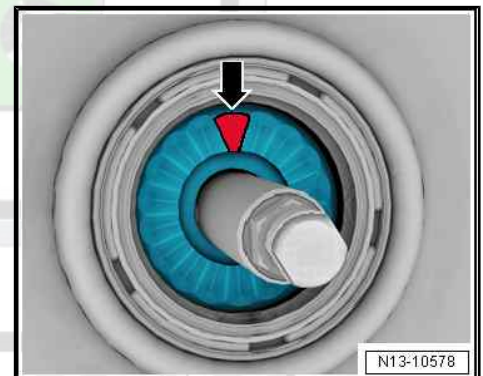


Installing

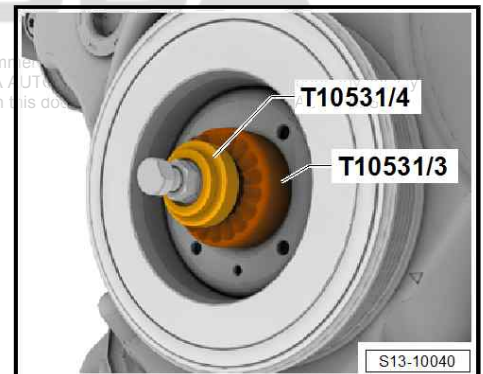
- Where necessary, remove the assembly tool - T10531/3- and assembly tool - T10531/4- from the assembly tool - T10531/2- .



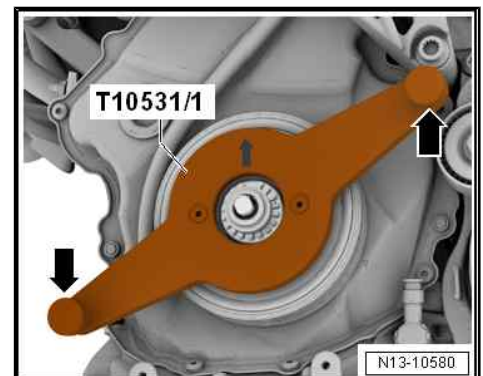
- Put the V-ribbed belt pulley crankshaft into the TCD position, note the tooth contour of the chain wheel -arrow-.



- Fit the assembly tool - T10531/3- onto the assembly tool - T10531/2- with the hexagon to the belt pulley and screw in the assembly tool - T10531/4- lightly.
- Check whether the belt pulley sits in the tooth contour and tighten the assembly tool - T10531/4- .

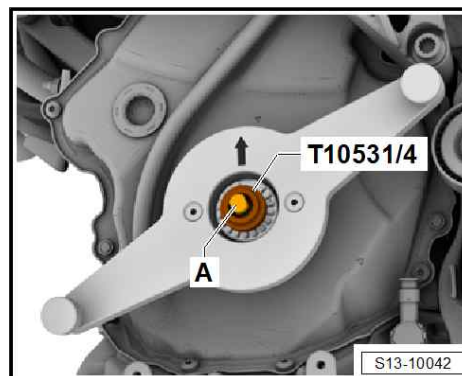


- Fit the assembly tool - T10531/1- and firmly secure with the hand using knurled screws, as shown in the figure.

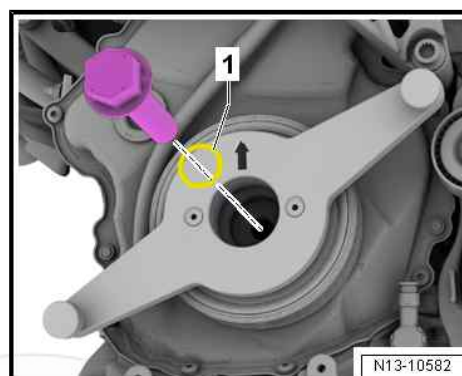




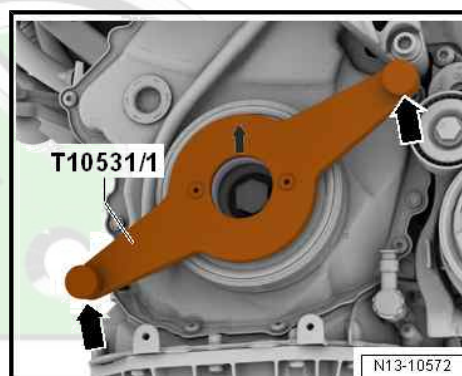
- Unscrew the assembly tool - T10531/4- and undo the clamping screw -A-.
- Unscrew the assembly tool - T10531/2- and remove together with the assembly tool - T10531/3- .



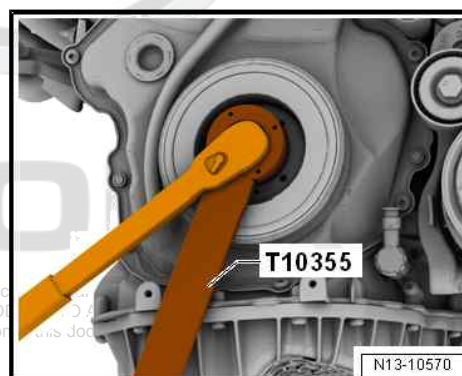
- Screw in new screw for the V-ribbed belt pulley crankshaft with the new O-ring -1- by hand.



- Unscrew the knurled screws -arrows- and remove the assembly tool - T10531/1- .



- Replace the screw for the V-ribbed belt pulley crankshaft with counterholder - T10355- .



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with respect to the correctness of information.

- Screw in the screws -arrows- on the cover of the timing belt.

Further installation occurs in reverse order.

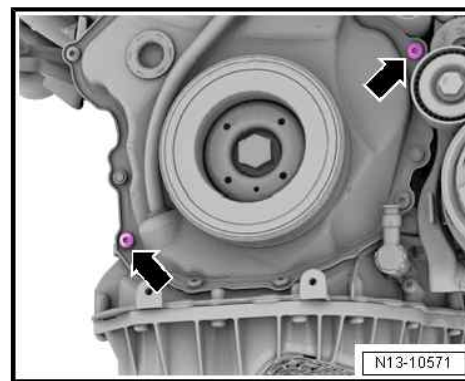
Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Vibration damper
⇒ [“1.1 Assembly overview - V-ribbed belt drive”, page 29](#) .
- ◆ Screws for the timing chain cover
⇒ [“2.1 Summary of components - cover for timing chains”, page 102](#) .
- ◆ Charge air pipe
⇒ [“2.1 Summary of components - charge air cooler”, page 274](#) .



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2 Cylinder block - gearbox end

⇒ "2.1 Summary of components - sealing flange and flywheel", page 44

⇒ “2.2 Removing and installing flywheel”, page 45

⇒ “2.3 removing and installing driver disc”, page 46

⇒ "2.4 Removing and installing sealing flange on gearbox side", page 47

2.1 Summary of components - sealing flange and flywheel



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

1 - Flywheel/drive plate

- ❑ removing and installing flywheel
⇒ “2.2 Removing and installing flywheel”, page 45
- ❑ removing and installing driver disc
⇒ “2.3 removing and installing driver disc”, page 46
- ❑ Assembly only possible in one position, -holes offset-

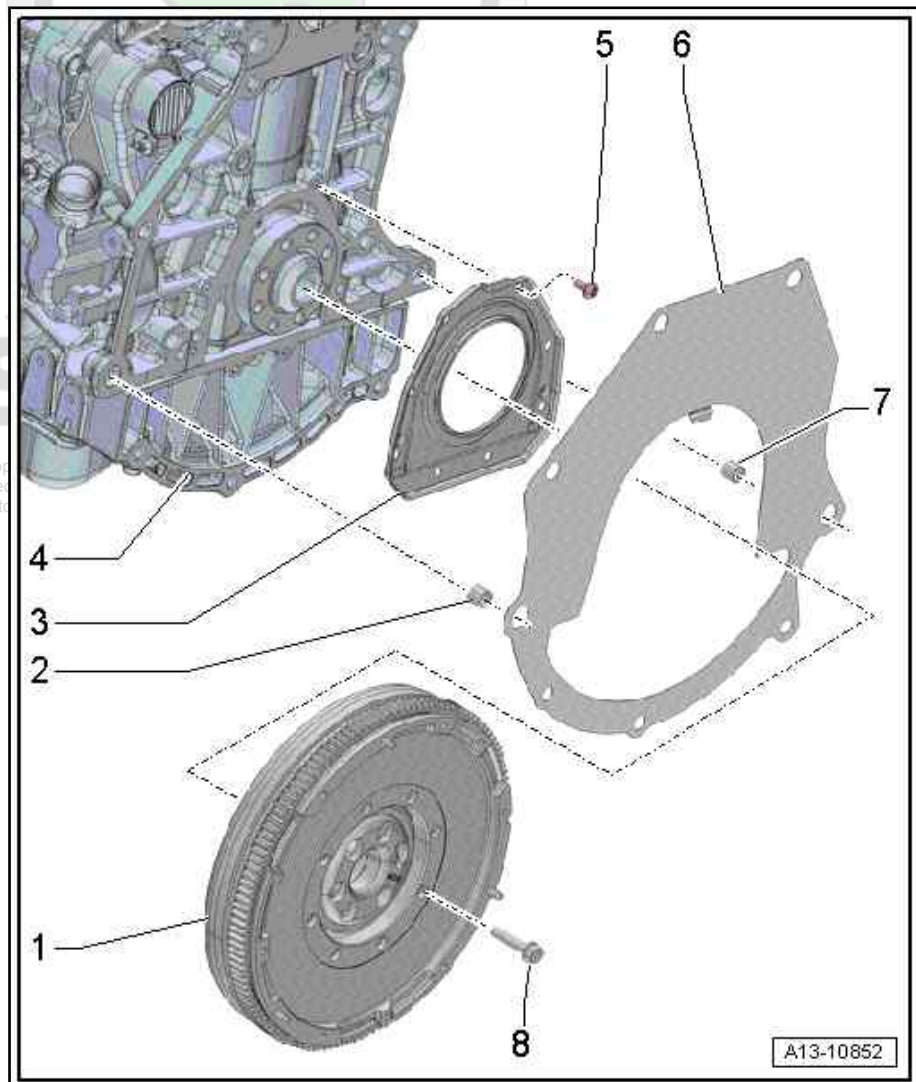
2 - Dowel pin

3 - Sealing flange on the gear-box side

- ❑ Replace after disassembly
- ❑ Removing and installing
⇒ “2.4 Removing and installing sealing flange on gearbox side”, page 47

4 - Cylinder block

- ❑ removing and installing crankshaft
⇒ “3.1 Summary of components - crankshaft”, page 51
- ❑ Disassembling and assembling pistons and conrods
⇒ “5.1 Assembly overview - piston and conrod”, page 66



5 - Screw

- Tightening torque and tightening order
 ⇒ Fig. “Sealing flange on gearbox side - tightening sequence”, page 45

6 - Intermediate plate

- ☐ must be positioned on dowel sleeves
- ☐ do not damage/bend during assembly work
- ☐ hooked to sealing flange on gearbox side ➔ Fig. "Install intermediate plate", page 45

7 - Dowel pin

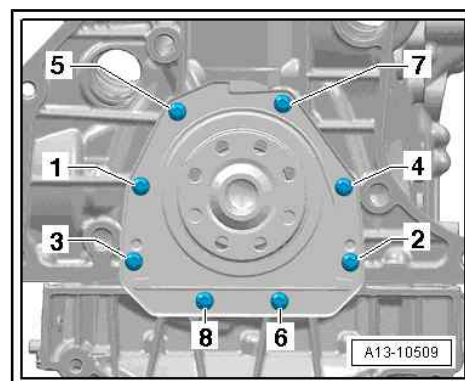
8 - Screw

- ☐ for flywheel / driver disc
- ☐ Replace after disassembly
- ☐ 60 Nm + 90°

Sealing flange on gearbox side - tightening sequence

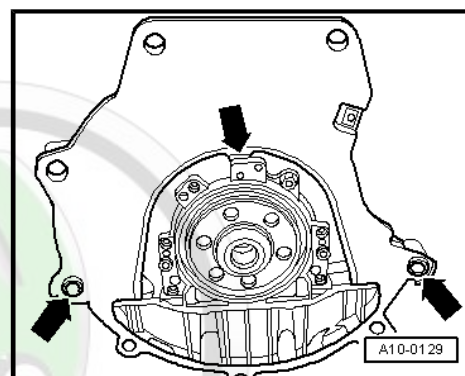
- Tighten screws in 2 steps in the given sequence:

Level	Screws	Tightening torque
1.	-1- to -8-	Tighten by hand as far as the stop
2.	-1- to -8-	9 Nm



Install intermediate plate

- Insert intermediate plate on sealing flange and push onto the dowel sleeves -arrows-.



2.2 Removing and installing flywheel

Special tools and workshop equipment required

- ◆ Counterholder - MP1-223 (3067)-

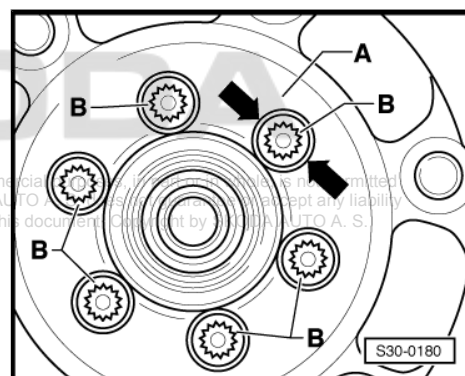
Removing

- Gearbox removed.
- Remove the clutch ➔ Gearbox; Rep. gr. 30 .



Risk of destruction of the flywheel.

- ◆ Do not unscrew screws -B- using a pneumatic power wrench or impact wrench - unscrew by hand.
- ◆ When unscrewing screws, ensure that no screw head is present on the flywheel.
- Rotate flywheel -A- so that the screws -B- are positioned in the centre of the bores -arrows-.





- Insert counterholder - MP1-223 (3067)- into the bore on the cylinder block Pos. -B-, loosen flywheel screws.
- Unscrew screws and remove flywheel.

Installing

Assembly is carried out in the reverse order. When installing, observe the following:

- Insert counterholder - MP1-223 (3067)- into the bore on the cylinder block Pos. -A-.

Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ♦ Flywheel to crankshaft
⇒ [“2.1 Summary of components - sealing flange and flywheel”, page 44](#) .

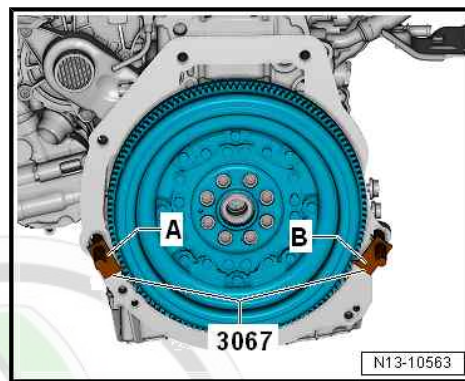
2.3 removing and installing driver disc

Special tools and workshop equipment required

- ♦ Flywheel lock - MP1-221 (VW 558)-
- ♦ Hexagon screw M8x45 and two nuts M10

Removing

- Gearbox removed.



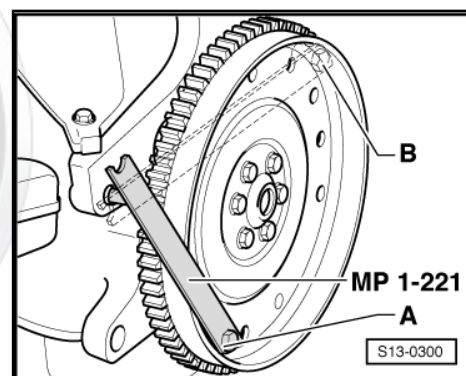
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Loosen and tighten the driver disc (several versions)

- Attach counterholder for clutch - MP1-221 (VW 558)- with M8x45 bolt to the drive plate. Insert two M10 nuts between the counterholder for clutch and the drive plate. Fitting position of the counterholder: A - for slackening, B - for tightening.

NOTICE

- ◆ Risk of damage to the driver disk bearing.
 - ◆ Use an internal serration wrench of at least 40 mm length to loosen and tighten the screw for the driver disk.
- Loosen screws and remove driver disk carefully.



Installing

Assembly is carried out in the reverse order. When installing, observe the following:



Note

Use new screws for attaching.

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Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Driver plate on crankshaft
⇒ ["2.1 Summary of components - sealing flange and flywheel", page 44](#) .

2.4 Removing and installing sealing flange on gearbox side

Special tools and workshop equipment required

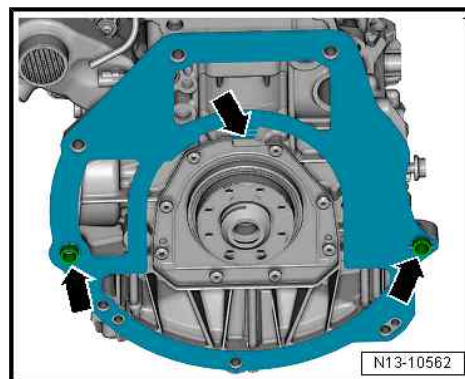
- ◆ Cleaning and degreasing agent , e.g. -D 009 401 04-
- ◆ Sealant remover Gasket Stripper (stock code GST, stock item No. R 34402), manufacturer Retech s.r.o.
- ◆ Silicone sealant ⇒ ETKA - Electronic catalogue of original parts
- ◆ Assembly tool - T10122/1-
- ◆ Guide piece - T10122/6A-
- ◆ Protective goggles
- ◆ Protective gloves

Removing

- Gearbox removed.
- Remove the flywheel
⇒ ["2.2 Removing and installing flywheel", page 45](#) .



- Unhook intermediate plate at the sealing flange on the gearbox side and at the dowel sleeves -arrows-.



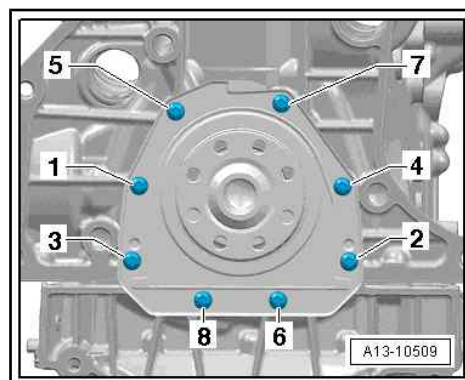
- Unscrew the screws -1- to -8-.
- Press off the sealing flange on the gearbox side.

Installing



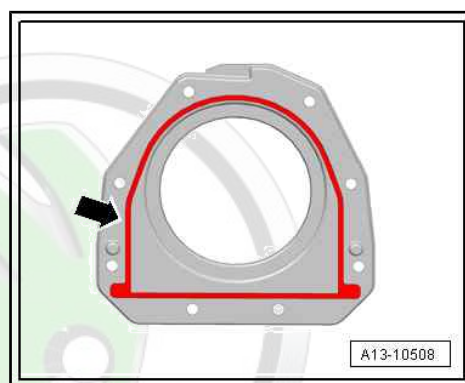
Note

- ◆ *Risk of injury.*
- ◆ *Wear safety gloves and safety goggles.*
- Clean sealing surface on cylinder block and on the upper part of the oil sump and remove sealant residues with chemical sealant remover.
- Degrease the sealing surfaces.
- Clean the crankshaft journal. If corrosion occurs, lightly wipe the crankshaft journal with engine oil.
- Apply silicone sealant ⇒ ETKA - Electronic Catalogue of Original Parts -arrow-, as shown in the figure, to the clean sealing surface of the flange.
- ◆ Thickness of sealant bead: 2-3 mm.



Note

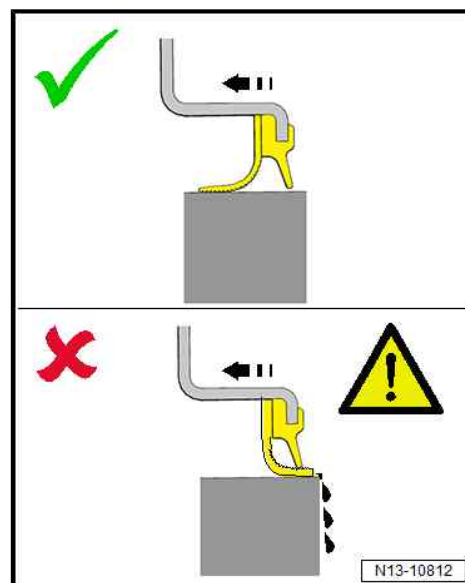
- ◆ *Pay attention to the use by date on silicone sealant.*
- ◆ *The sealing flange on the gearbox side must be installed within 5 minutes after applying the silicone sealant.*
- ◆ *The sealant bead must not be thicker than specified otherwise excess sealant may get into the oil sump and clog the strainer in the oil suction pipe.*
- Check the sealing lip of the sealing flange.



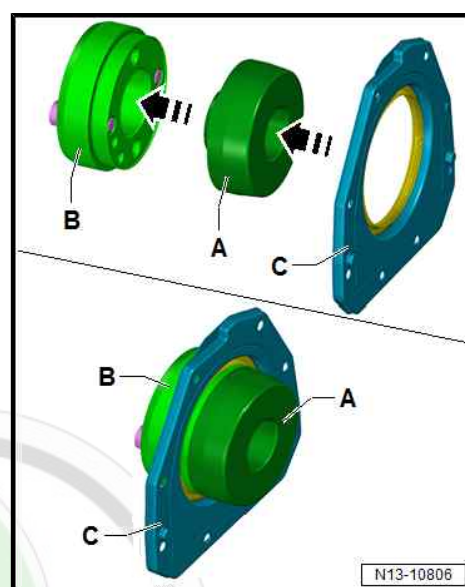
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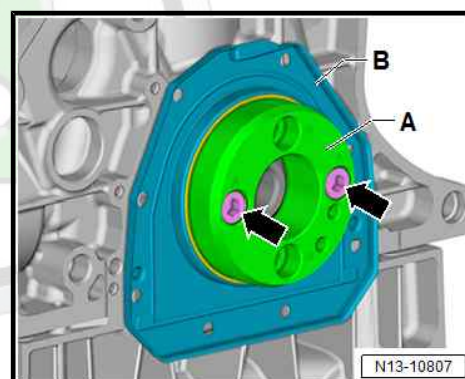
- The sealing lip must not be kinked or damaged.
- The sealing lip must point to the engine after installation. If the sealing lip »tilts outwards (rolls up)« during installation, this will result in an oil leak.



- Check the guide piece - T10122/6A- -B-.
- The guide piece - T10122/6A- -B- must not have sharp edges and must not be soiled.
- Push the assembly tool - T10122/1- -A- onto the guide piece - T10122/6A- -B-.
- Push the sealing flange -C- onto the guide piece - T10122/6A- -B- as shown in the figure.
- Remove the assembly tool - T10122/1- -A-.



- Mount the guide piece - T10122/6A- -A- with the sealing flange -B- onto the crankshaft pin. Tighten screws -arrows-.
- Push the sealing flange -B- over the guide piece - T10122/6A- -A- onto the crankshaft pin.
- Remove the guide piece - T10122/6A- -A-.



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- Tighten screws -1- to -8-
⇒ Fig. [“Sealing flange on gearbox side - tightening sequence”](#), page 45 .



Note

After installing the sealing flange, allow the sealant to dry for about 30 minutes. Only then fill with engine oil.

Further installation occurs in reverse order.

- Check the oil level.

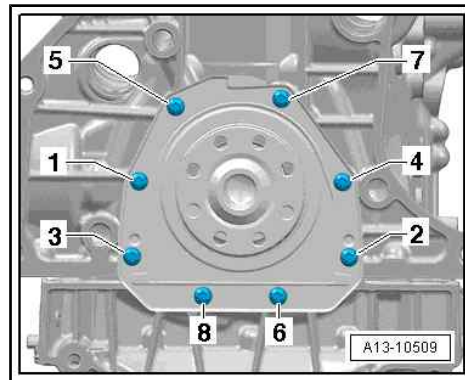
Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Screws for sealing flange on gearbox side
⇒ [“2.1 Summary of components - sealing flange and flywheel”](#), page 44 .



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3 Crankshaft

⇒ [“3.1 Summary of components - crankshaft”, page 51](#)

⇒ [“3.2 Assignment of crankshaft bearing shells”, page 54](#)

⇒ [“3.3 Replace the needle bearing in the crankshaft”, page 55](#)

⇒ [“3.4 Measuring axial play of crankshaft”, page 56](#)

3.1 Summary of components - crankshaft



Note

- ◆ *Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.*
- ◆ *If considerable quantities of metal swarf or abrasion is found when carrying out an engine repair, this can be subject to damage to the crankshaft and conrod bearings. In order to avoid consequential damage, after the repair perform the following tasks:*
 - Carefully clean the oil galleries.
 - Replace oil injection nozzles.
 - Replace engine oil cooler.
 - Replace oil filter.
- ◆ *Before removing the crankshaft, ensure a suitable place is available for placing it down so that the sensor rotor Pos. -8- does not rest on anything or get damaged.*
- ◆ *Secure the engine with engine mount on the assembly stand before performing assembly work.*



1 - Cylinder block

- ☐ if the cylinder block is replaced, the bearing shells in the cylinder block will need to be re-assigned
⇒ ["3.2 Assignment of crankshaft bearing shells", page 54](#)

2 - Bearing shell for cylinder block

- ☐ with lubricating groove
- ☐ do not mix up used bearing shells (mark)
- ☐ Identification
⇒ ["3.2 Assignment of crankshaft bearing shells", page 54](#)

3 - Crankshaft

- ☐ Axial play when new: 0.07...0.23 mm
- ☐ Wear limit: 0.30 mm
- ☐ $\varnothing$ Crankshaft bearing journal:
- ◆ 1.8 l engines: $\varnothing$ 52.00 mm
- ◆ 2.0 l engines: $\varnothing$ 58.00 mm
- ☐ $\varnothing$ Conrod bearing pin: 47.80 mm
- ☐ Place the crankshaft aside after removal so that the sensor rotor Pos. -8- does not rest or is damaged.
- ☐ if the crankshaft is replaced, the bearing shells for the bearing covers will need to be re-assigned
⇒ ["3.2 Assignment of crankshaft bearing shells", page 54](#)
- ☐ the needle bearing is mounted on vehicles with automatic transmission
- ☐ Pulling out and driving in the needle bearing for crankshaft
⇒ ["3.3 Replace the needle bearing in the crankshaft", page 55](#)

4 - Bearing shell for bearing cap

- ☐ without lubricating groove
- ☐ do not mix up used bearing shells (mark)
- ☐ Identification ⇒ ["3.2 Assignment of crankshaft bearing shells", page 54](#)

5 - Screw

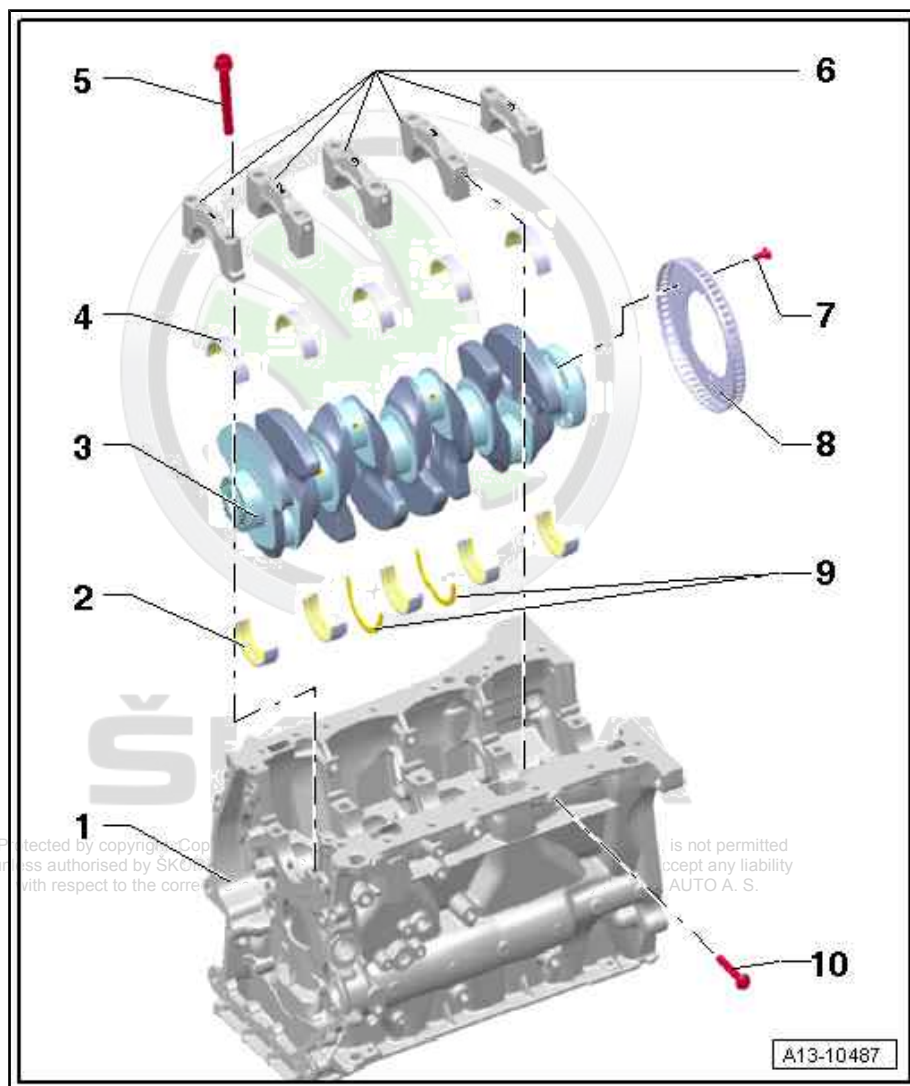
- ☐ Replace after disassembly
- ☐ Tightening torque and tightening order ⇒ [Fig. ""Crankshaft - tightening sequence"" , page 53](#)

6 - Bearing caps

- ☐ Bearing cap 1: belt pulley side
- ☐ retaining lugs of the bearing shells of the cylinder block/bearing cap must be on top of one another

7 - Screw

- ☐ Replace after disassembly
- ☐ replace sensor rotor each time the bolts are slackened
- ☐ 10 Nm + 90°



8 - Rotor

- ☐ For engine speed sender - G28- .
- ☐ replace sensor rotor each time the bolts are slackened
- ☐ assembly only possible in one position -holes offset-
- ☐ Removing and installing ⇒ Fig. [““Removing and installing sensor rotor””](#) , page 53

9 - Thrust washers

- ☐ for bearing 3

10 - Screw

- ☐ Replace after disassembly
- ☐ Tightening torque and tightening order ⇒ Fig. [““Crankshaft - tightening sequence””](#) , page 53

Removing and installing sensor rotor



Note

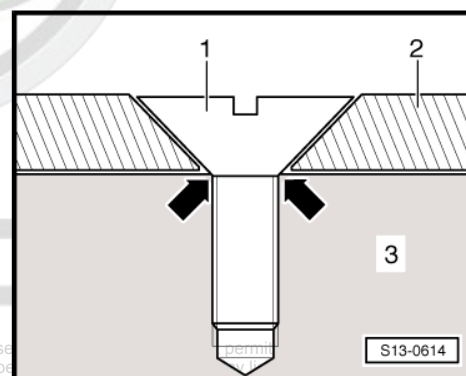
Before removing the crankshaft, ensure a suitable place is available for placing it down so that the sensor rotor does not rest on anything or get damaged.

- Always replace the sensor rotor -2- each time the bolts -1- are slackened.



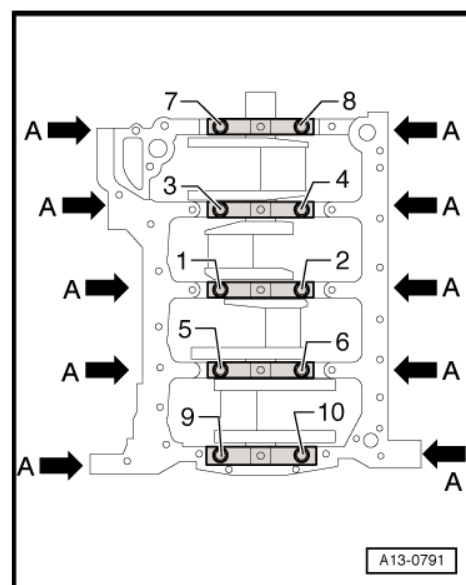
Note

- ◆ *After being attached a second time, the attachment point of the countersunk screws in the sensor rotor is sufficiently misshapen that the bolt heads rest against the crankshaft -3- -arrows-. The sensor rotor is positioned loosely underneath the screws.*
- ◆ *It is only possible to install the sensor rotor in one position, the holes are offset.*



Crankshaft - tightening sequence

- Replace all screws for crankshaft and tighten in the sequence -1- to -10- as follows:
1. Screw in screws -1- to -10- and arrows -A- hand-tight.
 2. Pre-tighten screws-1- to -10- to 65 Nm.
 3. Tighten screws -1- to -10- a further 90° with a rigid wrench.
 4. Tighten screws arrows -A- to 20 Nm.
 5. Tighten screws arrows -A- a further 90° using a rigid wrench.





3.2 Assignment of crankshaft bearing shells

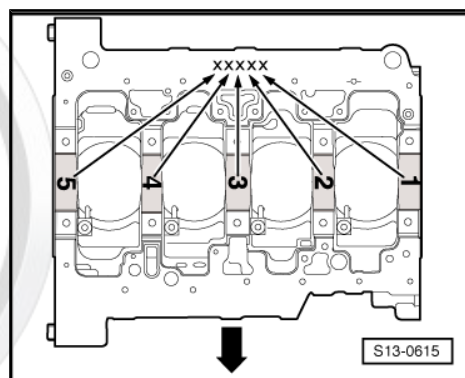
The bearing shells are allocated to the cylinder block with the right thickness at the works. Coloured points on the bearing shell are used to mark the bearing shell thickness.

Which bearing shells (upper bearing shell) must be used in which position is indicated with letters on the lower sealing surface of the cylinder block or on the front face of the cylinder block (gearbox side).

Which bearing shell (lower bearing shell for bearing cover) must be used at which position, is indicated on the crankshaft with letters.

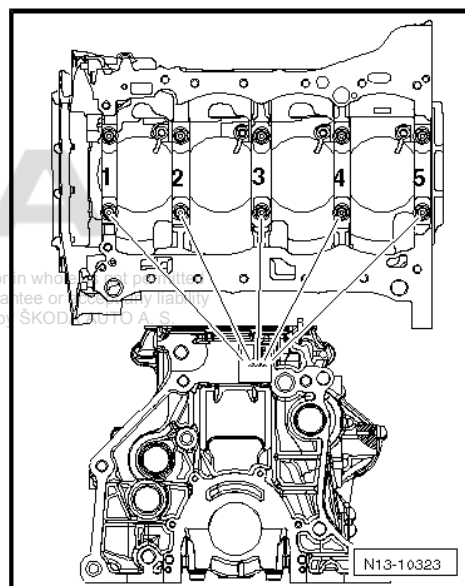
Cylinder block

The marking on the cylinder block can either be on the sealing surface of the oil sump (-arrow- shows the direction of travel) or on the front face of the cylinder block (gearbox side).



The marking on the cylinder block applies for the upper bearing shell (bearing shell for cylinder block).

- Note down the letters and look for the colour indication to be installed using the table.



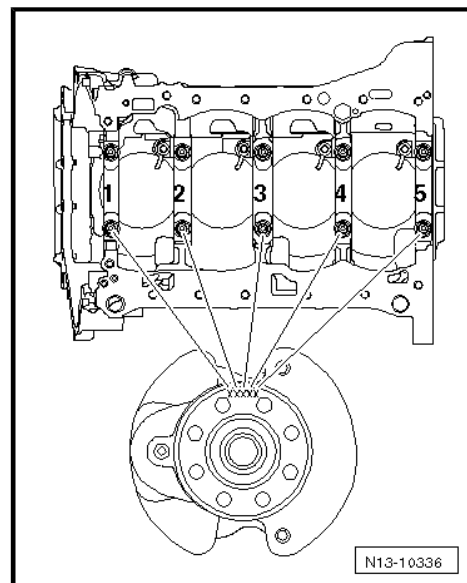
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Crankshaft

The marking on the crankshaft applies for the lower bearing shell (bearing shell for bearing cover).

- Note down the letters and look for the colour indication to be installed using the table.

Letter		Bearing colour coding
S	=	black
R	=	red
B	=	blue
G	=	yellow
W	=	white



3.3 Replace the needle bearing in the crankshaft

Special tools and workshop equipment required

- ◆ Interior extractor 16-18 mm , e.g. -Kukko 21/2- or -VAS 251 635-
- ◆ Countersupport , e.g. -Kukko 22/1- or -VAS 251 621-
- ◆ Centering mandrel -T30029 (3176)-



Note

Only on vehicles fitted with automatic gearbox.

Condition

- If the engine and transmission were separated, always replace the needle bearing -arrow-.
- The leading edges of the internal extractor must not have broken out.



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Extraction

- Attach interior extractor to the needle bearing edge -arrow-.
- Pull out the needle bearing -1- with internal extractor -A- e.g. -Kukko 21/2- or -VAS 251 635- and countersupport -B-, e.g. -Kukko 22/1- or -VAS 251 621- from the crankshaft -2-.

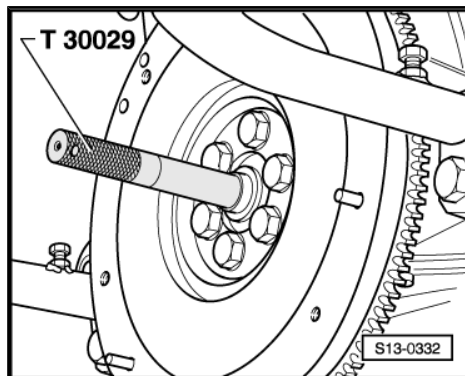
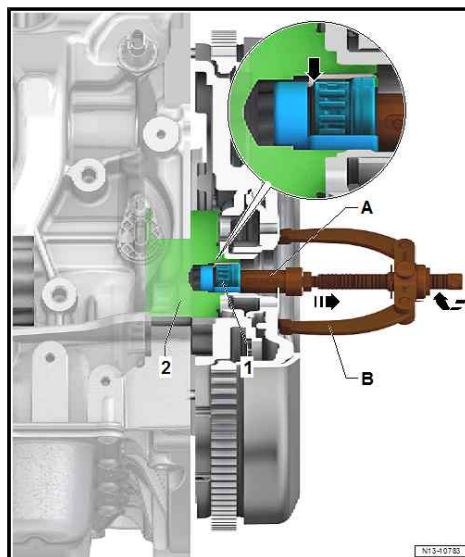
Installing



Note

The marked side of the needle bearing should be legible when in its installed condition.

- Clean the bearing in the crankshaft and apply a thin coat of lubricating grease.
- Drive in the needle bearing with the Zentriertorn -T30029 (3176)- into the crankshaft.

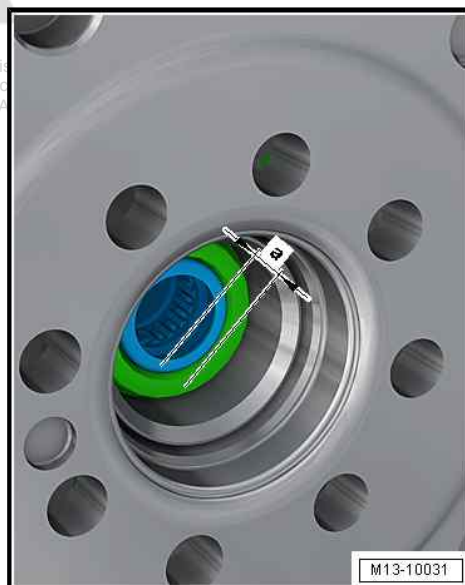


Assembly depth: dimension -a- = 2 mm.



Note

If the needle bearing is driven into too deep it will need replacing as it is damaged when pulling it out.



3.4 Measuring axial play of crankshaft

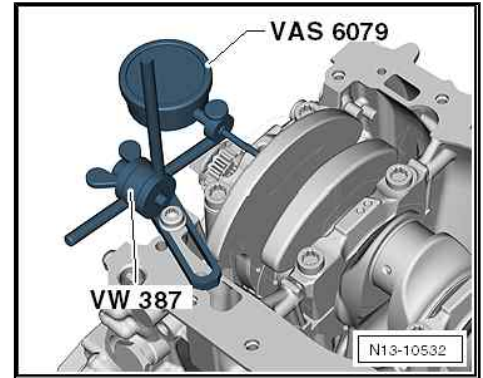
Special tools and workshop equipment required

- ♦ Universal dial gauge bracket - MP3-447 (VW 387)-
- ♦ Dial gauge e.g. -VAS 6079-

- Screw on the dial gauge with universal dial gauge bracket - MP3-447 (VW 387)- to the cylinder block and set against the wall of the crankshaft with a bias of approx. 2 mm.
- Push off the crankshaft off the dial gauge and set the dial gauge to "0".
- Press the crankshaft by hand against the dial gauge and read off the value.

Axial clearance:

- New part: 0.07 ... 0.23 mm
- Wear limit: 0,30 mm



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4 Balancing shaft

⇒ [“4.1 Summary of components - balancing shaft timing chain and balancing shafts”, page 58](#)

⇒ [“4.2 Removing and installing the balancing shaft timing chain”, page 60](#)

⇒ [“4.3 Removing and installing balancing shaft for inlet camshaft”, page 60](#)

⇒ [“4.4 Removing and installing balancing shaft for exhaust camshaft”, page 63](#)

4.1 Summary of components - balancing shaft timing chain and balancing shafts



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

1 - Screw

- 9 Nm

2 - Balancing shaft

- Replace after disassembly
- Outlet side
- Oil bearing with engine oil
- Removing and installing
⇒ [“4.4 Removing and installing balancing shaft for exhaust camshaft”, page 63](#)

3 - Pipe for balancing shaft

- Fitting position
⇒ [Fig. “Pipe for balancing shaft - fitting position”, page 59](#)

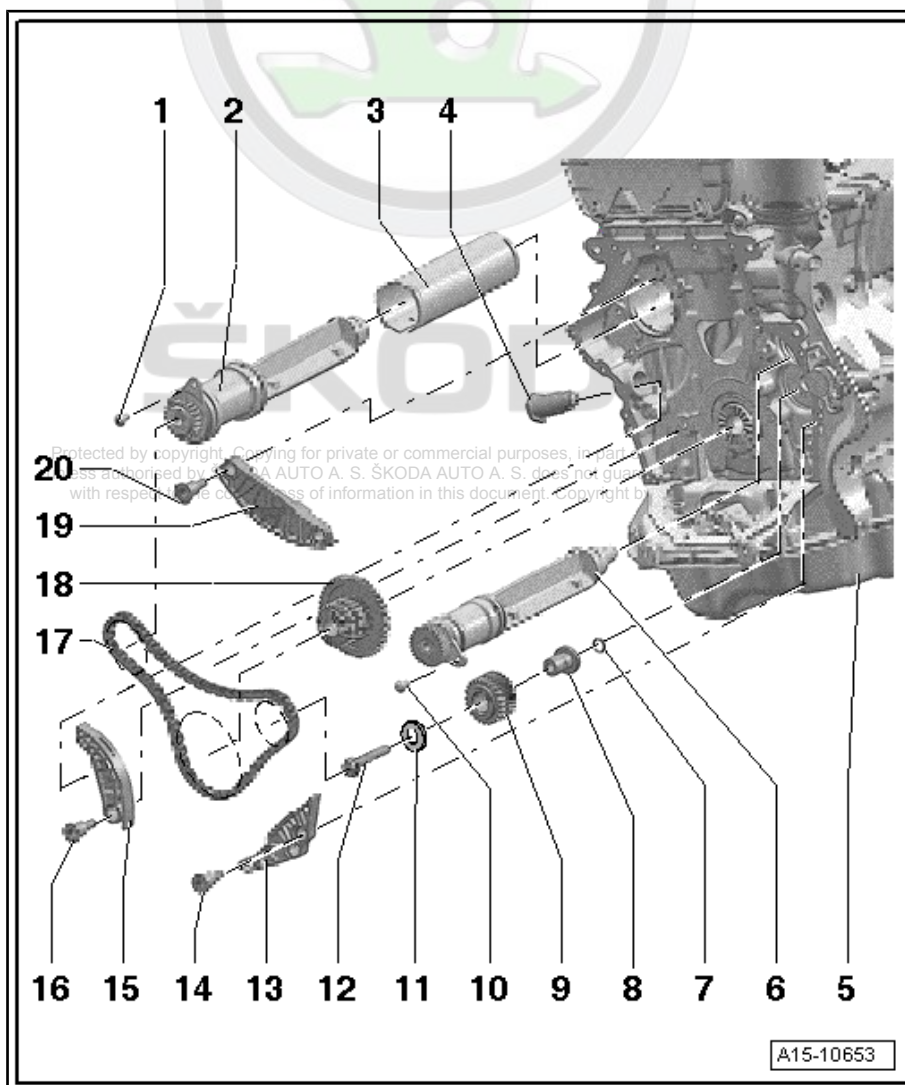
4 - Chain tensioner

- install with sealant ⇒ ETKA - Electronic Catalogue of Original Parts
- 85 Nm

5 - Cylinder block

6 - Balancing shaft

- Replace after disassembly
- Inlet side
- Oil bearing with engine oil
- Removing and installing
⇒ [“4.3 Removing and installing balancing shaft for inlet camshaft”, page 60](#)



7 - O-ring

- ☐ moisten with engine oil

8 - Bearing bolt

- ☐ moisten with engine oil
- ☐ Fitting position ⇒ [Fig. "Bearing bolts - installation position", page 60](#)

9 - Intermediate shaft wheel

- ☐ for balancing shaft
- ☐ when the bolt Pos. -12- was undone, the intermediate shaft wheel must be replaced due to the clearance on the toothed flank.
- ☐ Fitting position
⇒ [Fig. "Intermediate shaft wheel for balancing shaft - fitting position and tightening sequence", page 60](#)

10 - Screw

- ☐ 9 Nm

11 - Thrust washer

12 - Screw

- ☐ Replace after disassembly
- ☐ when undoing the screw, the intermediate shaft wheel Pos. -9- must be replaced.
- ☐ Tightening torque and tightening order
⇒ [Fig. "Intermediate shaft wheel for balancing shaft - fitting position and tightening sequence", page 60](#)

13 - Sliding rail

14 - Guide bolt

- ☐ 20 Nm

15 - Tensioning rail

16 - Guide bolt

- ☐ 20 Nm

17 - Balancing shaft timing chain

- ☐ Removing and installing ⇒ ["4.2 Removing and installing the balancing shaft timing chain", page 60](#)

18 - Sprocket

- ☐ at the crankshaft
- ☐ Fitting position ⇒ [Fig. "Chain sprocket to crankshaft - fitting position", page 113](#)

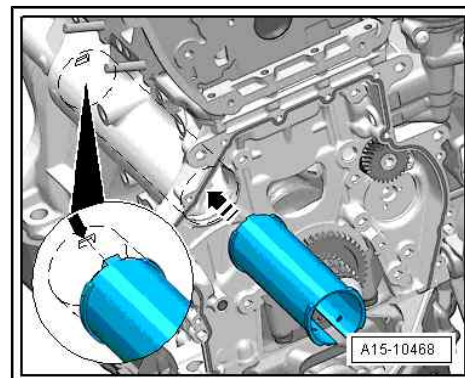
19 - Sliding rail

20 - Guide bolt

- ☐ 20 Nm

Pipe for balancing shaft - fitting position

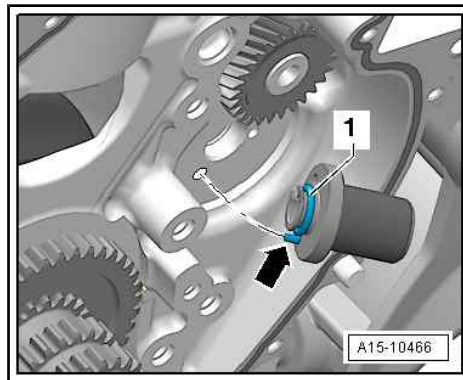
- The trunnion from the pipe for the balancing shaft must click into the groove -arrow-.





Bearing bolts - installation position

- Replace and oil the O-ring -1-.
- The fitted pin -arrow- for bearing bolts must latch into the bore of the cylinder block.
- Oil the bearing bolts.

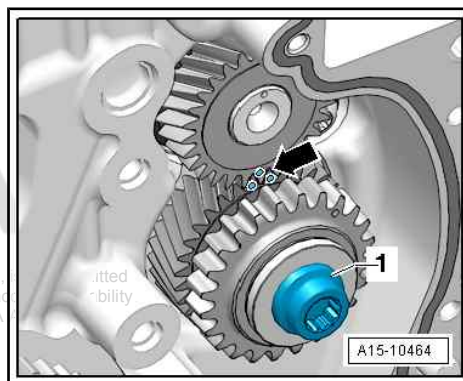


Intermediate shaft wheel for balancing shaft - fitting position and tightening sequence

NOTICE

- ◆ Risk of engine damage!
- ◆ The intermediate shaft wheel must be replaced. Otherwise, the backlash cannot be adjusted.

The new intermediate shaft wheel has a smooth paint covering which wears off after a short running time, and thus automatically sets the backlash.



- The marking on the balancing shaft must stand between the marks on the new intermediate shaft wheel -arrow-.
- Tighten the new screw as follows:
 1. Initially tighten using torque wrench to 10 Nm.
 2. Turn intermediate shaft wheel.

The intermediate shaft wheel must not have any play. Otherwise, undo and re-tighten.

 3. Tighten using torque wrench to 30 Nm.
 4. Tighten further 90° with a rigid wrench.

4.2 Removing and installing the balancing shaft timing chain

The procedure for “removing and installing drive chain for balancing shaft” is included in the procedure for “removing and installing camshaft timing chain”

⇒ [“3.2 Removing and installing the camshaft timing chain”, page 113](#).

4.3 Removing and installing balancing shaft for inlet camshaft

Special tools and workshop equipment required

- ◆ Extractor - T10394-
- ◆ Extractor - T10055-

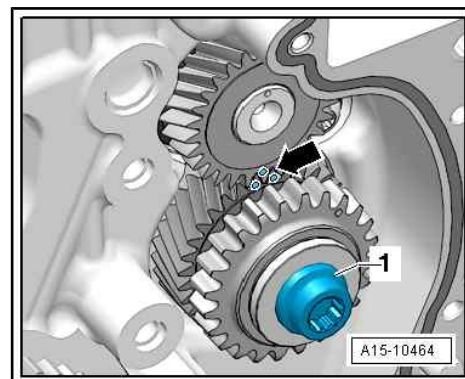


Note

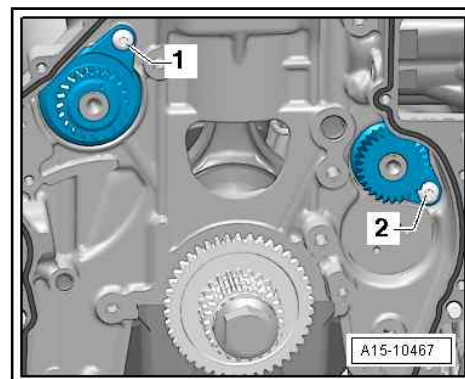
Always replace the balancing shaft after the removal.

Removing

- Remove toothed belt for coolant pump
⇒ [“2.5 Removing and installing toothed belt for coolant pump”, page 191](#).
- Remove balancing shaft timing chain
⇒ [“4.2 Removing and installing the balancing shaft timing chain”, page 60](#).
- Remove intermediate shaft wheel -1-.

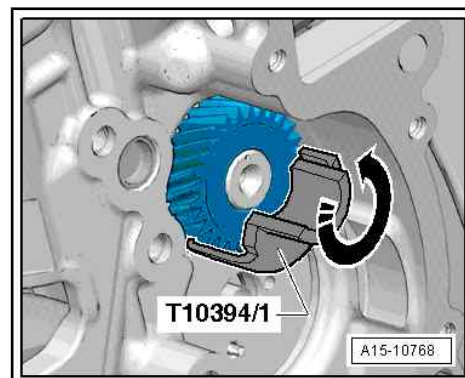


- Remove screw -2- for balancing shaft for inlet camshaft and remove the balancing shaft.

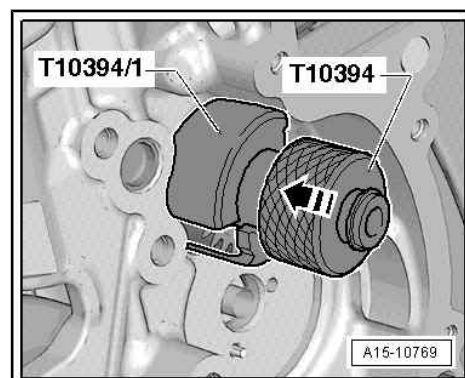


If the balancing shaft cannot be removed by hand, use the extractor - T10394-.

- Fit half shell - T10394/1- of puller - T10394- and turn upwards in -direction of arrow-.



- Fit puller - T10394- and slide sliding sleeve in -direction of arrow-.





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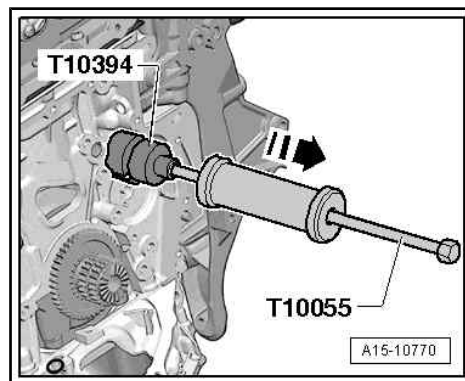
- Screw the puller - T10055- into the puller - T10394- and drive out the balancing shaft in the -direction of arrow-.

Installing

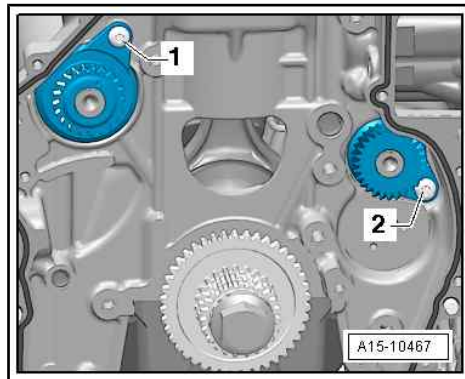


Note

Due to the minimum clearance between the balancing shaft and the cylinder block, it may be necessary to install a cooled balancing shaft. Check whether it is possible to slide the balancing shaft into the cylinder block without applying any force. If this is not the case, it is necessary to cool out the balancing shaft before the installation.



- Place the new balancing shaft for 30 minutes into a freezer cabinet or spray this with a standard commercial cooling spray.
- Moisten bearing points of the balancing shaft with engine oil.
- Install the balancing shaft for inlet camshaft and tighten the screw -2-.



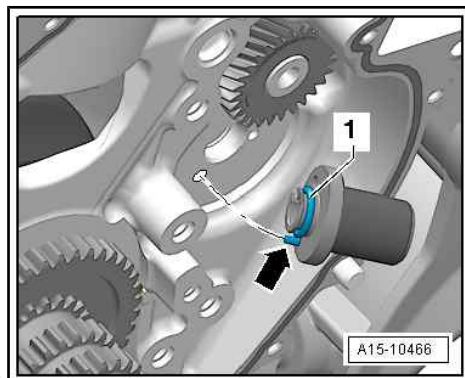
- Replace O-ring -1- and moisten with engine oil.
- Wet the bearing bolts with engine oil and enters the cylinder block so that the fit pin -arrow- engages in the bore in the cylinder block.



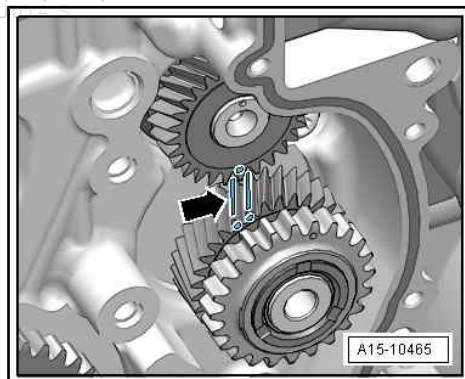
NOTICE

- ♦ Risk of engine damage!
- ♦ The intermediate shaft wheel must be replaced. Otherwise, the backlash cannot be adjusted.

The new intermediate shaft wheel has a smooth paint covering which wears off after a short running time, and thus automatically sets the backlash.



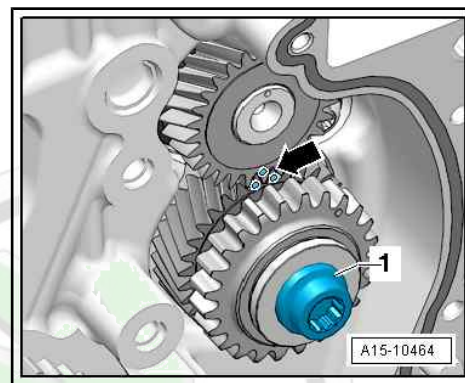
- Mark the toothed flanks of two adjacent teeth of the intermediate shaft wheel with colour -arrow-.
- Insert intermediate shaft wheel.



- The marking on the balancing shaft must stand between the marks on the intermediate shaft wheel -arrow-.
- Tighten the new screw -1- for the intermediate shaft wheel
⇒ [Fig. “Intermediate shaft wheel for balancing shaft - fitting position and tightening sequence”](#), page 60 .
- Check marks on intermediate shaft wheel/balancing shaft -arrow-.

Further installation occurs in reverse order. However, pay attention to the following:

- Install balancing shaft timing chain
⇒ [“4.2 Removing and installing the balancing shaft timing chain”](#), page 60 .
- Replace gasket ring for coolant pump drive
⇒ [“2.7 Replace radial shaft seal for coolant pump drive”](#), page 196 .
- Install toothed belt for coolant pump
⇒ [“2.5 Removing and installing toothed belt for coolant pump”](#), page 191 .



Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Summary of components

⇒ [“4.1 Summary of components - balancing shaft timing chain and balancing shafts”](#), page 58 .

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4.4 Removing and installing balancing shaft for exhaust camshaft

Special tools and workshop equipment required

- ◆ Extractor - T10394-
- ◆ Extractor - T10055-



Note

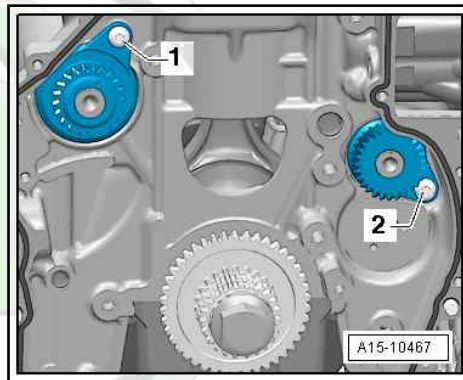
Always replace the balancing shaft after the removal.

Removing

- Remove balancing shaft timing chain
⇒ [“4.2 Removing and installing the balancing shaft timing chain”](#), page 60 .

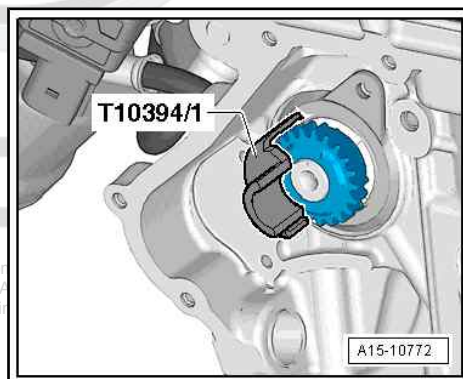


- Remove screw -1- for balancing shaft for outlet camshaft and remove the balancing shaft.

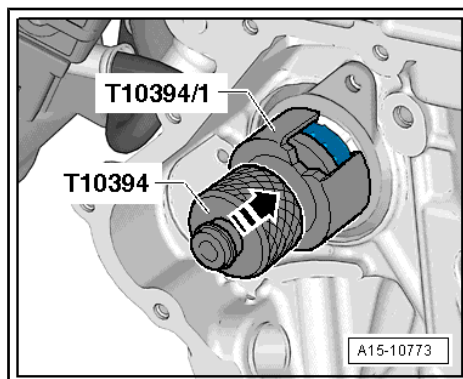


If the balancing shaft cannot be removed by hand, use the extractor - T10394- .

- Fit device - T10394/1- from puller - T10394- .



- Fit puller - T10394- and slide sliding sleeve in -direction of arrow-.



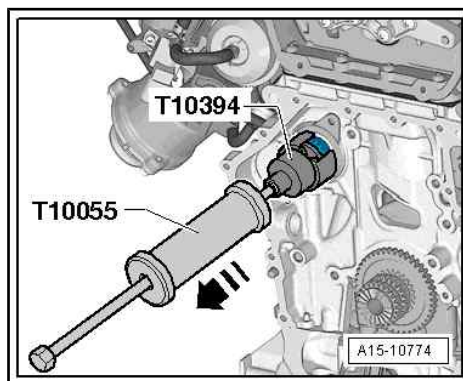
- Screw the puller - T10055- into the puller - T10394- and drive out the balancing shaft in the -direction of arrow-.

Installing



Note

Due to the minimum clearance between the balancing shaft and the cylinder block, it may be necessary to install a cooled balancing shaft. Check whether it is possible to slide the balancing shaft into the cylinder block without applying any force. If this is not the case, it is necessary to cool out the balancing shaft before the installation.



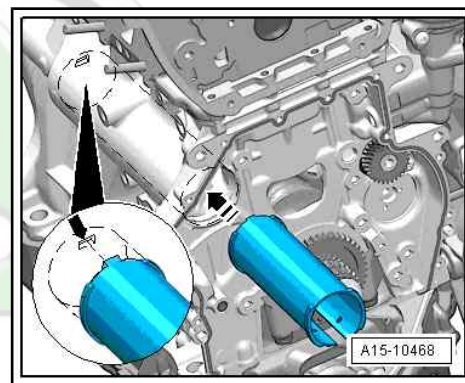
- Check fitting position of pipe for balancing shaft -arrow-.
- The trunnion -arrow- must latch into the groove.



Note

To place the pipe into the crankshaft housing, this must be pressed together somewhat.

- Place the compressed tube in the crankcase and detach.
- Place the new balancing shaft for 30 minutes into a freezer cabinet or spray this with a standard commercial cooling spray.
- Moisten bearing points of the balancing shaft with engine oil.
- Install the balancing shaft for the exhaust camshaft.
- Before tightening the screw -1- check whether the balancing shaft rests plane against the cylinder block.

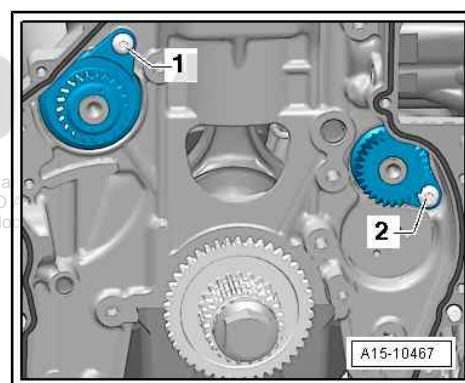


Note

If the balancing shaft does not rest plane, the pipe for the balancing shaft will need to be refitted.

Further installation occurs in reverse order. However, pay attention to the following:

- Install balancing shaft timing chain
⇒ [“4.2 Removing and installing the balancing shaft timing chain”, page 60](#) .



Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Summary of components
⇒ [“4.1 Summary of components - balancing shaft timing chain and balancing shafts”, page 58](#) .

5 Pistons and conrods

⇒ "5.1 Assembly overview - piston and conrod", page 66

⇒ "5.2 Removing and installing the piston", page 68

⇒ "5.3 Check piston and cylinder bore", page 70

⇒ "5.4 Separating new connecting rod", page 72

5.1 Assembly overview - piston and conrod



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

1 - Conrod bolt

- ☐ Replace after disassembly
- ☐ Oil threads and contact surface
- ☐ M8: 30 Nm + 90°
- ☐ M9: 45 Nm + 90°

2 - Connecting rod bearing cap

- ☐ Check fitting position
- ☐ as a result of the connecting rods separated in the cracking process, the cover fits only in one position and only to the relevant connecting rod
- ☐ Mark assignment to cylinder -A-
- ☐ Fitting position: markings -B- point towards the belt pulley side

3 - Bearing shells

- ☐ pay attention to correct installation position
⇒ Fig. "Bearing shell installation position", page 67
- ☐ Moisten with oil before installing
- ☐ Do not mix up used bearing shells
- ☐ Axial play when new: 0.10...0.35 mm

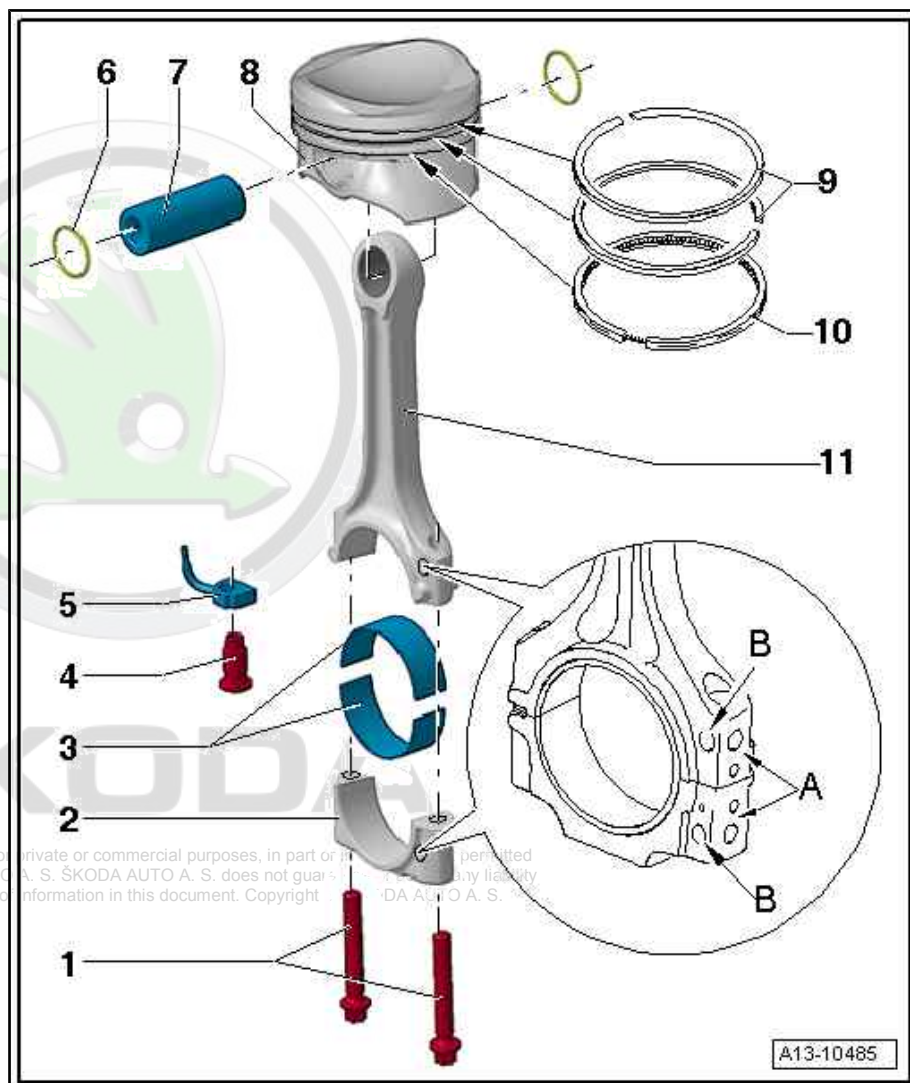
Wear limit: 0,4 mm

4 - Pressure relief valve

- ☐ 27 Nm
- ☐ Opening pressure: 0.16...0.19 MPa (1.6...1.9 bar)

5 - Oil spray jet

- ☐ for piston cooling



6 - Circlip

7 - Piston pin

- ☐ If difficult to remove, heat piston to 60 °C
- ☐ use drift - VW 222 A- for removing and installing

8 - Piston

- ☐ Removing and installing ⇒ [“5.2 Removing and installing the piston”, page 68](#)
- ☐ Mark the installation position and the assignment to cylinder
- ☐ arrow on the piston crown faces towards the belt pulley side
- ☐ Install using piston ring tensioning strap
- ☐ Check piston and cylinder bore ⇒ [“5.3 Check piston and cylinder bore”, page 70](#)
- ☐ Piston Ø: 82.465 mm (nominal dimension)
- ☐ Cylinder Ø: 82.51 mm (nominal dimension)

9 - Piston rings

- ☐ Offset gaps by 120°
- ☐ use piston ring pliers for removing and installing
- ☐ Label “TOP” or manufacturer's mark must point upwards towards the piston crown
- ☐ Check ring gap ⇒ [Fig. “Checking piston ring gap”, page 70](#)
- ☐ Check end clearance ⇒ [Fig. “Checking ring-to-groove clearance”, page 71](#)

10 - Oil scraper ring

- ☐ Different versions ⇒ ETKA - Electronic Catalogue of Original Parts
- ☐ Install 3-piece oil wiper ring ⇒ [page 68](#)
- ☐ Install joint, offset to adjacent compression ring by 120°
- ☐ Check ring gap ⇒ [Fig. “Checking piston ring gap”, page 70](#)
- ☐ Ring-to-groove clearance not measurable.

11 - Connecting rod

- ☐ with a split bearing cap
- ☐ Renew as set only.
- ☐ Mark assignment to cylinder -A-
- ☐ Fitting position: markings -B- point towards the belt pulley side
- ☐ separate new conrod ⇒ [“5.4 Separating new connecting rod”, page 72](#)

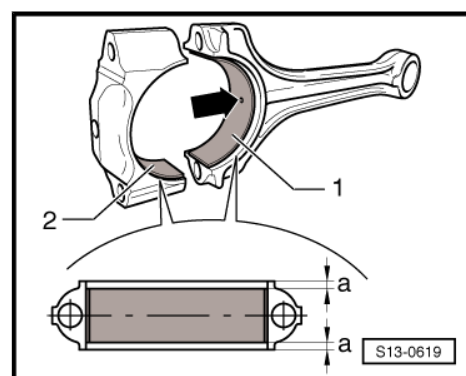
Bearing shell installation position

Bearing shell -1- with oil drilling -arrow- for conrod.

Bearing shell -2- without oil drilling for conrod bearing cap.

- Insert bearing shells in the connecting rod and in the connecting rod bearing cap centred.

The dimension -a- must be the same on the right and left.

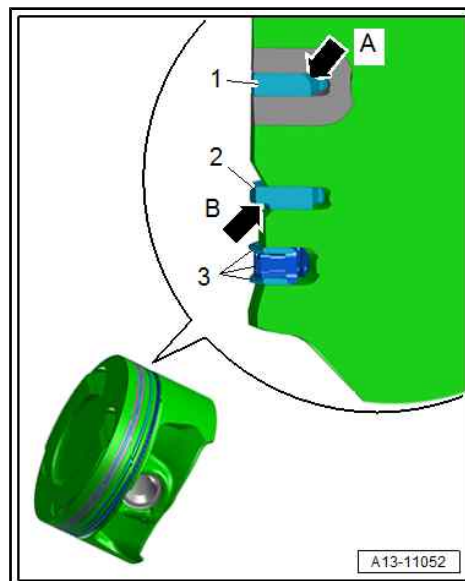


**Assign piston rings (only for 3-piece oil stripping ring)**

1 - Compression ring with chamfered edge arrow -A- inside at the top. Label "TOP" or manufacturer's mark must point upwards towards the piston crown

2 - Compression ring with the recess at the bottom arrow -B-. Label "TOP" or manufacturer's mark must point upwards towards the piston crown

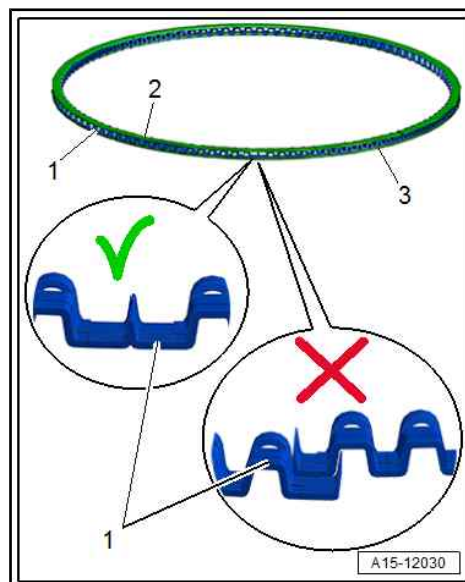
3 - 3-part oil scraper ring:

**Install 3-piece oil wiper ring**

- Observe installation position of spring:
 - Install lamellar locks -2- -3- and spring -1- offset at least 90°.
- Install by hand.

order of installation:

- 1. Insert spring -1- into the groove.
- 2. Insert lamella -3- into the groove at the bottom.
- 3. Insert lamella -2- into the groove at the top.

**5.2 Removing and installing the piston****Special tools and workshop equipment required**

- ♦ Mandrel - VW 222 A-
- ♦ Assembly sleeve - T40347-
- ♦ Piston ring pliers

Removing

- Remove engine
⇒ ["1 Removing and installing engine", page 8](#) .
- Secure engine to the assembly stand
⇒ ["1.3 Securing the engine to the assembly stand", page 17](#) .
- Remove cylinder head
⇒ ["1.2 Removing and installing cylinder head", page 77](#) .
- Remove sump top part
⇒ ["1.4 Removing and installing top part of the oil sump", page 162](#) .
- Mark installation position and assignment of the piston to the cylinder.

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- Mark installation position and assignment of the connecting rod to the cylinder
⇒ [“5.1 Assembly overview - piston and conrod”, page 66](#) .
- Remove conrod bearing cap and pull out piston with conrod upwards.
- Remove the circlip -2- from the bore of the piston pin.



Note

If the piston pin is difficult to remove, heat piston to 60 °C.

- Remove piston pin -3- with mandrel - VW 222 A- .
- Remove the piston -1- from the connecting rod -4-.

Installing



NOTICE

Danger of damage to the three-part oil wiper ring!

Install the 3-piece oil wiper ring using only the mounting sleeve - T40347- .

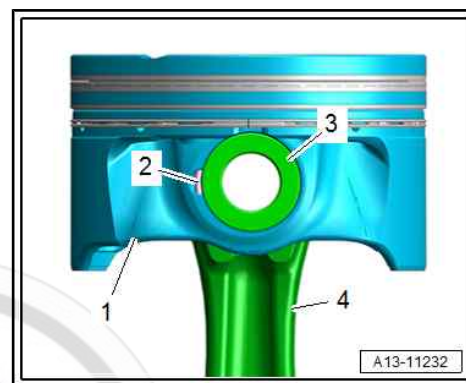
The installation occurs in reverse order. However, pay attention to the following:

- Lubricate the contact surfaces of the bearing shells.
- Install piston:
 - ◆ Oil stripping ring 2-part: with standard piston ring tensioning strap.
 - ◆ Oil stripping ring 3-part: Carefully push the piston -1- into the cylinder -arrow- using the mounting sleeve - T40347- .



Note

- ◆ *Replace screws which have been tightened firmly to a torque angle.*
- ◆ *Arrow on piston crown faces towards the belt pulley side*
- ◆ *Offset piston ring joint by 120°*



Tightening torques - summaries of components



Note

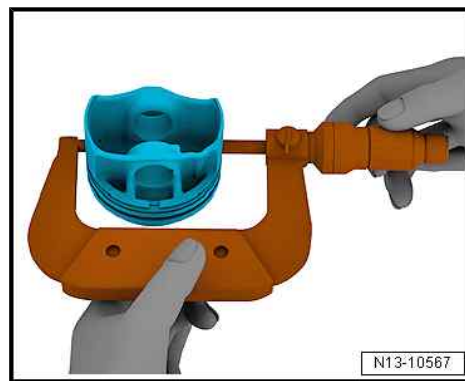
Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ connecting rod screws
⇒ [“5.1 Assembly overview - piston and conrod”, page 66](#) .



5.3 Check piston and cylinder bore

Inspecting piston



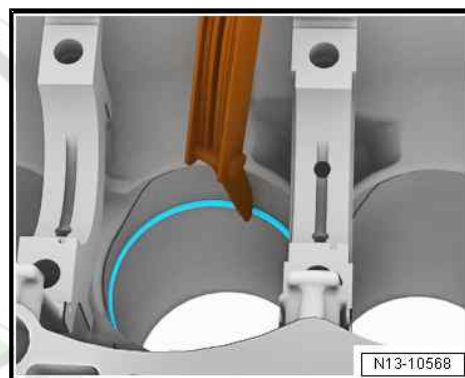
Special tools and workshop equipment required

- ◆ External micrometer 75...100 mm
- Measure about 10 mm from the lower edge and offset 90° to piston pin axis.

Deviations from specified dimension: maximum 0.04 mm

		Ø piston
Basic dimension	mm	82.42 ¹⁾
¹⁾ Dimensions without graphite coating (thickness 0.02 mm). The graphite coating wears off.		

Checking piston ring gap



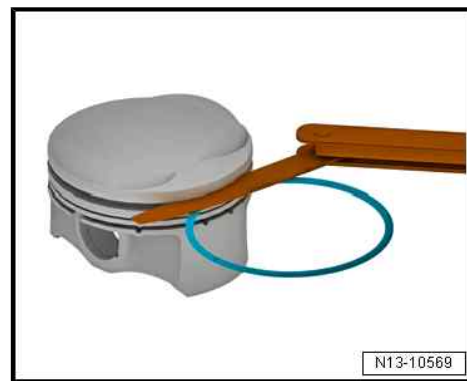
Special tools and workshop equipment required

- ◆ Feeler gauge
- Insert ring at right angles from above down into the lower cylinder opening, about 15 mm away from edge of cylinder.

Piston ring dimensions in mm	New	Wear limit
1st compression ring	0.30 - 0.40	0.80
2nd compression ring	0.40 ... 0.50	0.80
Oil scraper ring 2 part	0.20 - 0.40	0.80
Oil scraper ring 3 part	Not measurable	

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Checking ring-to-groove clearance



Special tools and workshop equipment required

- ◆ Feeler gauge
- Clean the annular groove before inspecting.

Piston ring dimensions in mm	End clearance	
	New	Wear limit
1st compression ring	0.06 ... 0.09	0.20
2nd compression ring	0.03 ... 0.06	0.15
Oil scraper ring	Not measurable	

Checking cylinder bores



Special tools and workshop equipment required

- ◆ Internal precision measuring instrument 50-100 mm



There is risk of damaging the cylinder bore surface.

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The cylinder opening must not be reworked using workshop means! Reworking damages the surface of the cylinder opening.



Note

Do not measure the cylinder bore if the cylinder block is fixed to the assembly stand with the engine mount, as this may result in incorrect measurements.

- Measure at three points crosswise in a transverse direction -A- and lengthwise -B-.

Deviations from specified dimension: maximum 0.08 mm

		Ø cylinder bore
Basic dimension	mm	82.51

5.4 Separating new connecting rod

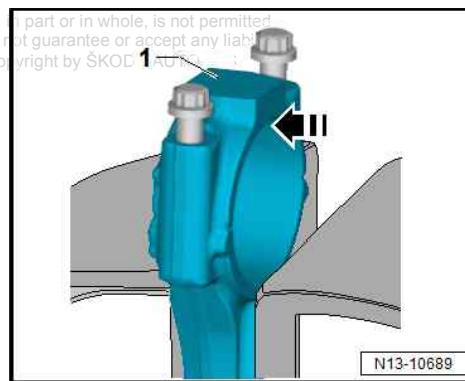
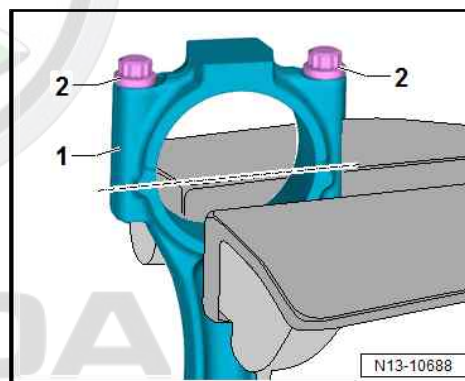
It can happen that on new conrods, the provided separation point is not completely cracked. If the connecting rod bearing cap cannot be removed by hand, then proceed as follows:

- Mark the assignment of the connecting rod to the cylinder.
- Slightly -1- clamp the conrod in a vice with aluminium protective jaws slightly, as shown in the figure.



Note

- ♦ *Only tension the conrod slightly in order to avoid damage on the conrod.*
- ♦ *The conrod is clamped below the broken line.*
- Unscrew both screws -2- by approx. 5 turns.
- Using a plastic hammer, carefully knock against conrod bearing cap in -direction of arrow- until it is loose.



15 – Cylinder head, valve gear

1 Cylinder head

⇒ [“1.1 Summary of components - cylinder head”, page 73](#)

⇒ [“1.2 Removing and installing cylinder head”, page 77](#)

⇒ [“1.3 Checking compression”, page 98](#)

⇒ [“1.4 Checking the combustion chamber for tightness”, page 99](#)

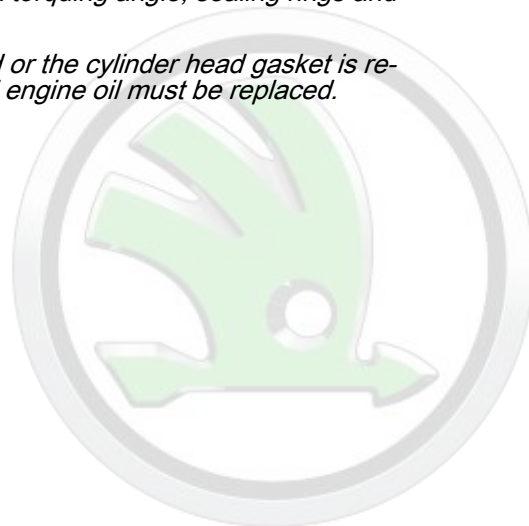
⇒ [“1.5 Removing and installing the vacuum pump”, page 100](#)

1.1 Summary of components - cylinder head



Note

- ◆ *If an exchange cylinder head is installed, all the contact surfaces between the supporting elements, roller rocker arms and the cam tracks must be oiled before the assembly of the cylinder head cover.*
- ◆ *Do not remove the plastic bases supplied as a protection for the open valves until just before fitting on the cylinder head.*
- ◆ *Replace cylinder head bolts after disassembly*
- ◆ *During assembly work, replace self-locking nuts and screws which are tightened to a torquing angle, sealing rings and seals.*
- ◆ *When the cylinder head or the cylinder head gasket is replaced, the coolant and engine oil must be replaced.*



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1 - Cylinder head gasket

- ☐ Replace after removal
- ☐ Observe fitting position:
Part number points to
cylinder head

2 - Screw

- ☐ Tightening torque and
tightening order
⇒ Fig. [“Cylinder head
with assembled cam-
shafts - Tightening or-
der”](#), page 76
- ☐ Tightening torque and
tightening order
⇒ Fig. [“Cylinder head
with camshafts re-
moved - Tightening or-
der”](#), page 77

3 - Cylinder head

- ☐ Removing and installing
⇒ [“1.2 Removing and in-
stalling cylinder head”](#),
page 77
- ☐ check for distortion
⇒ Fig. [“Checking cylin-
der head for distortion”](#),
page 77

4 - Cylinder head bolt

- ☐ Replace after removal,
several versions ⇒ ET-
KA - Electronic Cata-
logue of Original Parts
- ☐ pay attention to order for
slackening
⇒ Fig. [“”](#), page 75
- ☐ Tightening torque and
tightening order ⇒ Fig. [“Cylinder head with assembled camshafts - Tightening order”](#), page 76
- ☐ Tightening torque and tightening order
⇒ Fig. [“Cylinder head with camshafts removed - Tightening order”](#), page 77

5 - O-ring

- ☐ Replace after removal
- ☐ moisten with engine oil

6 - Plug

- ☐ with spherical head for engine cover
- ☐ 5 Nm

7 - Screw cap

- ☐ with gasket

8 - Plug

9 - to the intake manifold/turbocharger

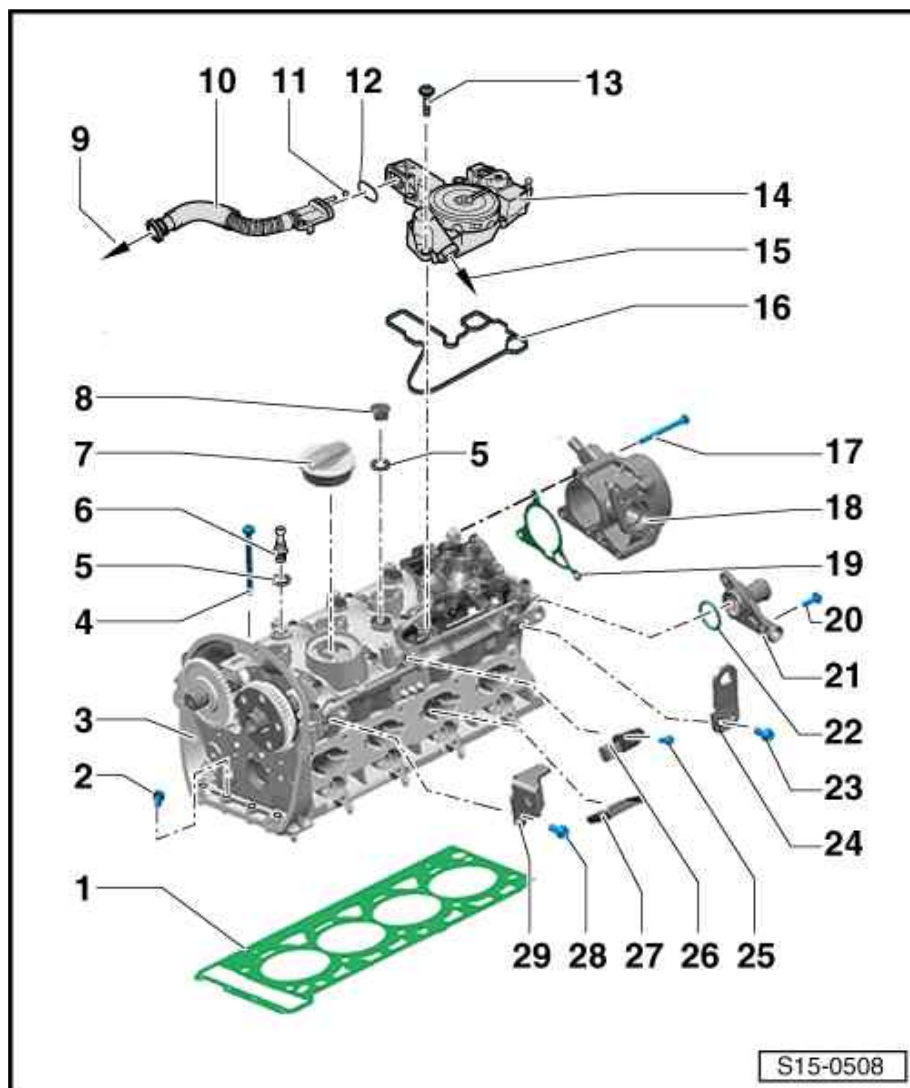
10 - Ventilation tube

11 - O-ring

- ☐ no spare part

12 - Sealing ring

- ☐ no spare part



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13 - Screw

- ☐ Tightening torque and tightening order
⇒ Fig. "Crankcase ventilation - tightening sequence", page 75

14 - Crankcase ventilation

15 - To intake manifold

16 - Seal

- ☐ replace if damaged

17 - Screw

- ☐ Tightening torques with the engine with identification characters BZB: 9 Nm
- ☐ Tightening torques with the engine with identification characters CDAA, CDAB, CCZA: 8 Nm + 180°
- ☐ Engines CDAA, CDAB, CCZA: replace after removal

18 - Vacuum pump

- ☐ Removing and installing ⇒ "1.5 Removing and installing the vacuum pump", page 100
- ☐ do not disassemble vacuum pump

19 - Seal

- ☐ Replace after removal

20 - Screw

- ☐ 9 Nm

21 - Connection fitting

22 - O-ring

- ☐ Replace after removal
- ☐ Moisten with coolant

23 - Screw

- ☐ 25 Nm

24 - Lifting eye - on the left

25 - Screw

- ☐ 9 Nm

26 - Hall transmitter - G40-

27 - Separation plate

28 - Screw

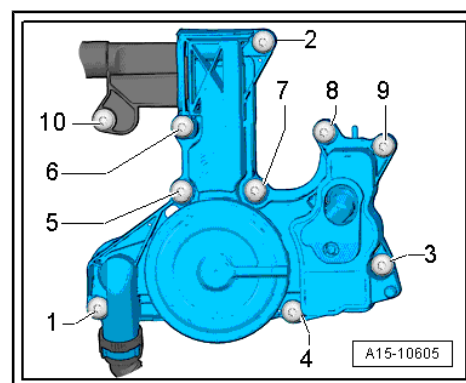
- ☐ 25 Nm

29 - Lifting eye - on the right

Crankcase ventilation - tightening sequence

- Tighten the bolts in the sequence -1- through -10- to 11 Nm.

Detach cylinder head



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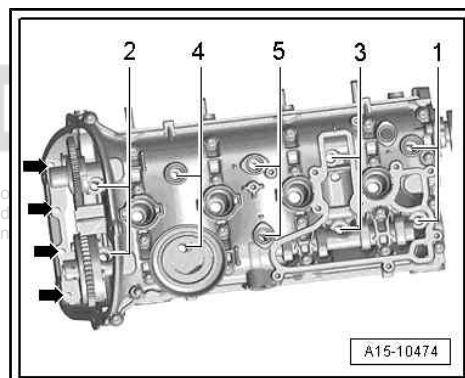
Octavia II 2004 ➤ , Octavia II 2010 ➤ , Superb II 2008 ➤ , Superb II 20 ...
1.8/112; 118 kW; 2.0/147 kW TSI engine - Edition 06.2019



A15-12201

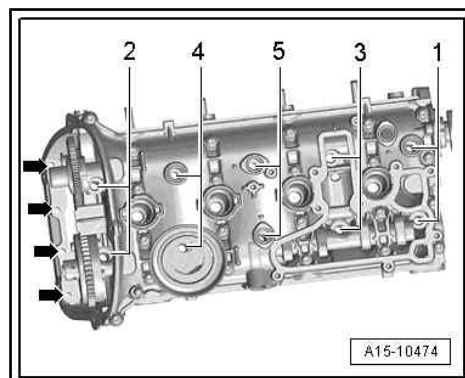
**Note**

- ◆ If cylinder head bolts with internal teeth and collar -arrow- are installed, remove the camshafts before unscrewing them.
- ◆ If the cylinder head cover without plug for cylinder head bolts -5- is installed, the camshaft must be removed.



A15-10474

- Remove screws -arrows-.
- Release the cylinder head bolts in the sequence -1- to -5-.

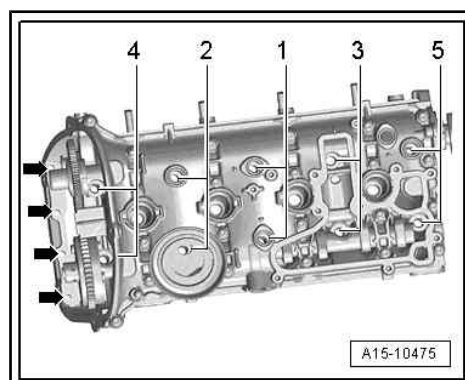


A15-10474

Cylinder head with assembled camshafts - Tightening order

- Tighten cylinder head screws with socket insert - T10070- in the order shown:

Level	Screws	Tightening torque
1	-1- to -5-	Tighten by hand as far as the stop
2	-1- to -5-	tighten with the torque wrench to 40 Nm
3	-1- to -5-	Turn 90° further
4	-1- to -5-	Turn 90° further
5	-Arrows-	8 Nm
6	-Arrows-	Turn 90° further

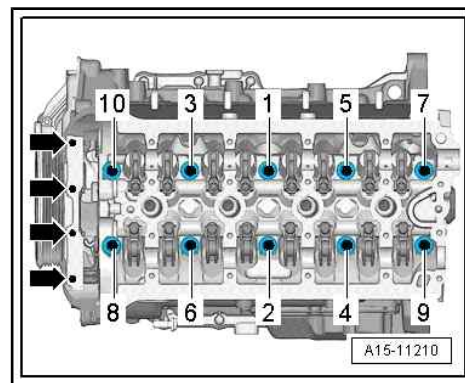


A15-10475

Cylinder head with camshafts removed - Tightening order

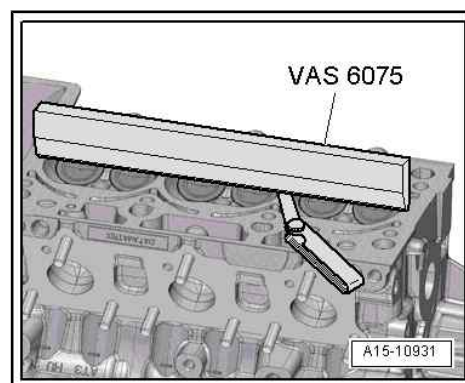
– Fasten the cylinder head bolts in the order shown:

Level	Screws	Tightening torque
1	-1- to -10-	Tighten by hand as far as the stop
2	-1- to -10-	tighten with the torque wrench to 40 Nm
3	-1- to -10-	Turn 90° further
4	-1- to -10-	Turn 90° further
5	-Arrows-	8 Nm
6	-Arrows-	Turn 90° further



Checking cylinder head for distortion

- Check the cylinder head at several points for distortion using the 500 mm knife-edge straightedge - VAS 6075- and feeler gauge.
- ◆ Maximum permissible distortion: 0.05 mm



1.2 Removing and installing cylinder head

Special tools and workshop equipment required

- ◆ Assembly tool - T10352- , depending on version:
- ◆ -T10352/1-
- ◆ -T10352/1A-
- ◆ -T10352/2-
- ◆ -T10352/3-
- ◆ -T10352/4-
- ◆ Counterholder - T10355-
- ◆ Rig pin - T40011-
- ◆ Mounting bracket - T10014-
- ◆ Socket - T10070-
- ◆ Counterholder - T40267-
- ◆ camshaft clamp - T40271-
- ◆ Lever - T40243-
- ◆ Bits XZN 10 - T10154-
- ◆ Lifting device - MP9-201 (2024 A)-
- ◆ Workshop crane , e.g. VAS 6100
- ◆ Sealant remover Gasket Stripper (stock code GST, stock item No. R 34402), manufacturer Retech s.r.o.

Removing

Observe safety measures when working on the fuel system

⇒ **“2.1 Safety precautions when working on fuel supply system”**
page 3 .

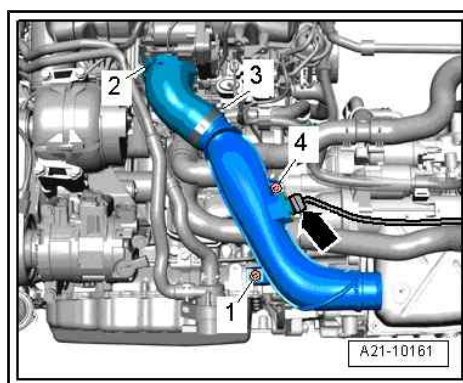
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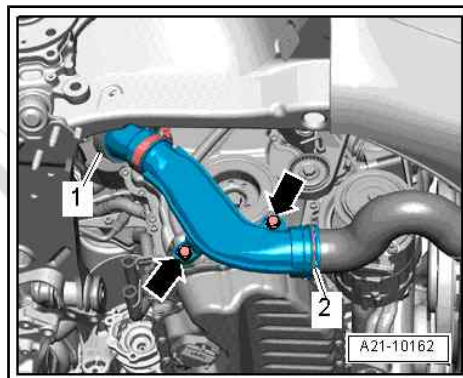
Observe rules for cleanliness

⇒ [“3.1 Rules of cleanliness”, page 6](#) .

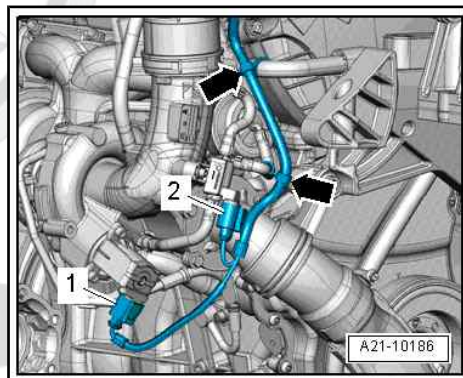
- The engine must be warm to the touch as otherwise, the cylinder head can distort when releasing.
- Reduce pressure in the high pressure system
⇒ [“2.3 Reducing pressure in the high pressure system”, page 4](#) .
- Remove air filter housing
⇒ [“3.2 Removing and installing air filter housing”, page 308](#) .
- Remove pre-exhaust pipe
⇒ [“1.5 Removing and installing pre-exhaust pipe”, page 335](#) .
- Drain coolant ⇒ [“1.3 Draining and filling coolant”, page 179](#) .
- Remove the front right wheelhouse liner ⇒ Body Work; Rep. gr. 66 .
- Loosen clamp -2-.
- Disconnect the connector -arrow- from the charge pressure sender - G31- .
- Unscrews the screws -1- and -4-, remove the charge-air pipe with the hose downwards.



- Remove screws -arrows-.
- Remove charge-air pipe, raise the terminals -1- and -2-.



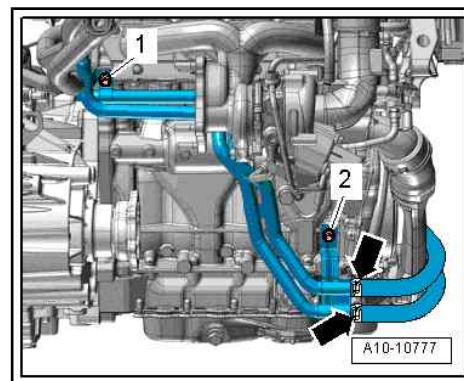
- Disconnect the connectors -1- and -2- and expose the electrical cable -arrows-.



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Vehicles with auxiliary heating

- Unscrew screws -1- and -2- and swivel coolant pipes to the left.

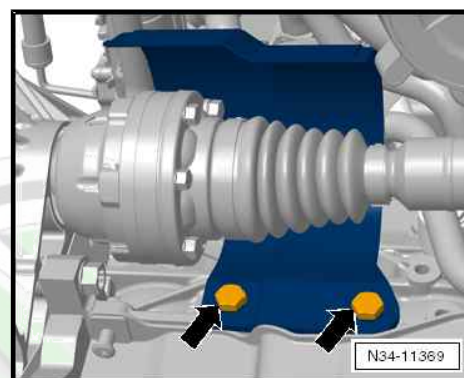


Vehicles with front-wheel drive

- Unbolt heat shield for right drive shaft -arrows-.

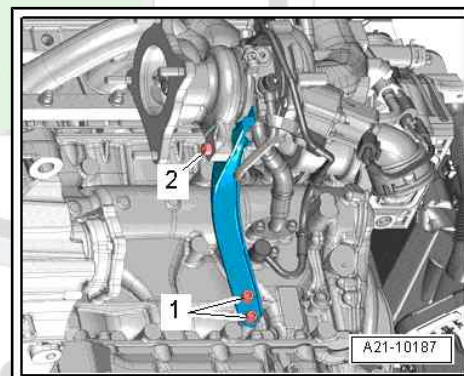
Vehicles with four-wheel drive

- Remove right flange shaft from gearbox ⇒ Chassis, axles, steering; Rep. gr. 40 ; Drive shaft; removing and installing drive shaft .



Continued for all vehicles

- With Bits XZN 10 - T10154- unscrew screws -1-.
- Release screw -2- and remove the support for turbocharger.



- Release screw -2-.

Vehicles with front-wheel drive

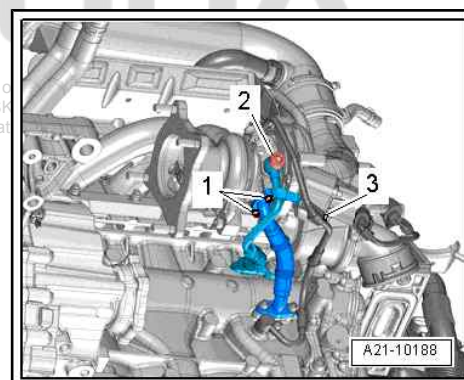
- Unscrew screws -1- at the oil return line.

Vehicles with four-wheel drive

- Unscrew the screws on the oil return line at the cylinder block.

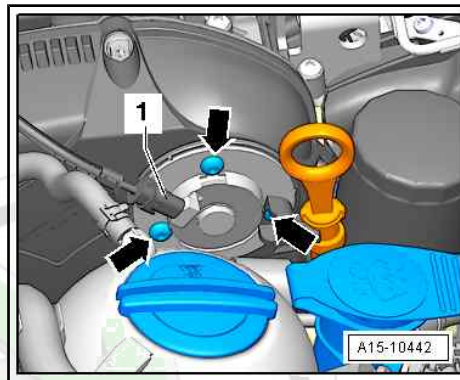
Continued for all vehicles

- Unscrew screw -3- at the oil feed line.





- Disconnect plug from the camshaft adjustment valve 1 - N205-1-.

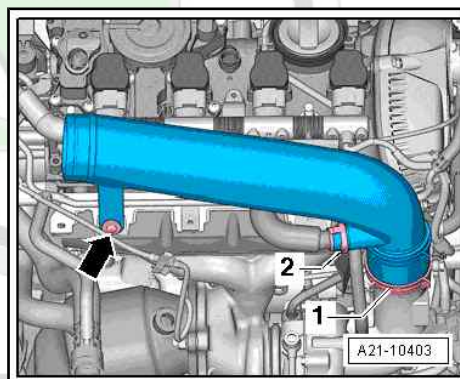


- Push release buttons -2- and remove the crankcase breather pipe from the air guide hose.
- Unscrew screw -arrow-.
- Loosen hose clamp -1- and remove air guide hose.

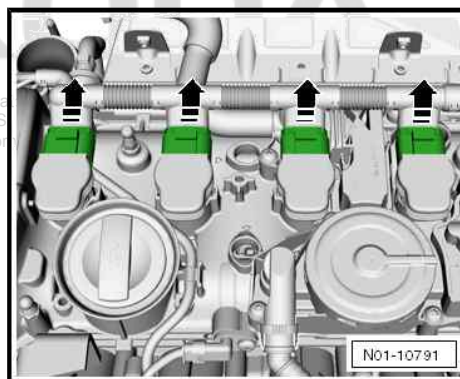


Note

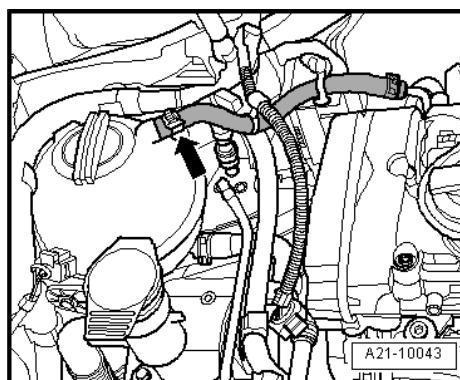
Close inlet connection at exhaust gas turbocharger.



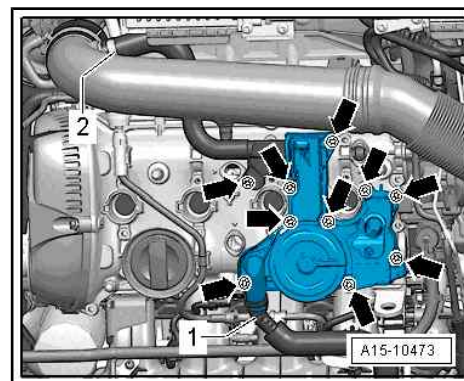
- Remove the connector from the ignition coils and place the wiring harness to one side.
- Remove ignition coils with extractor - T40039- ➔ ["1.2 Removing and installing ignition coils with output stage", page 342](#).



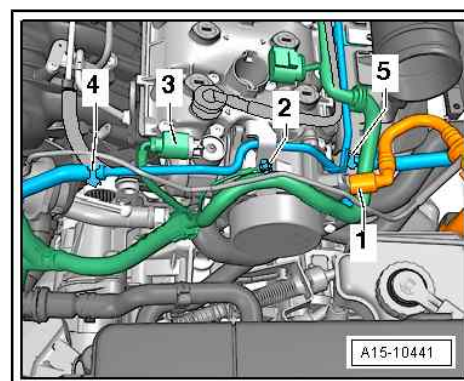
- Disconnect the coolant line for the coolant expansion tank -arrow-.



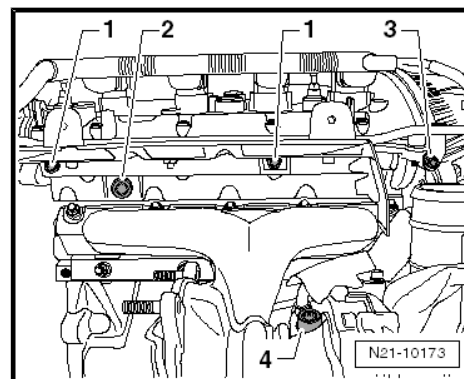
- Disconnect the hose for the crankcase ventilation -1-.
- Unscrew screws -arrows- and remove the crankcase ventilation.



- Remove the vacuum hose -1- from the vacuum pump and expose.
- Disconnect the vacuum hose from the turbocharger at the connecting stud underneath the position -1-.
- Unbolt earth cable -2-.
- Expose the wiring harness of the connector -3-.
- Detach coolant hoses -4- and -5-.
- Remove coolant hose from connection fitting of the cylinder head.

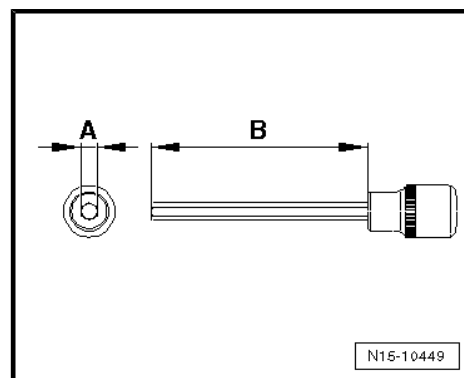


- Remove the screws -1- to -3- (20 Nm) for the heat shield and remove the heat shield together with the coolant pipe.



Note

Release the screw -2- from the heat shield using an adapter with a hexagon of 6 mm -A-. The attachment must be at least 5 cm long -B-.



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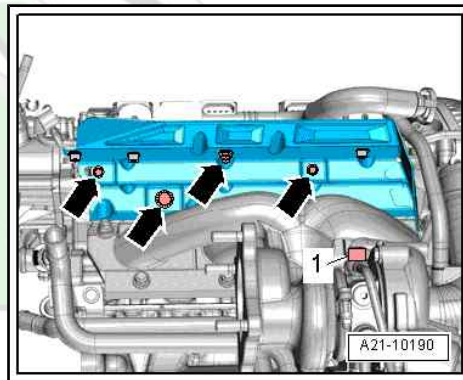


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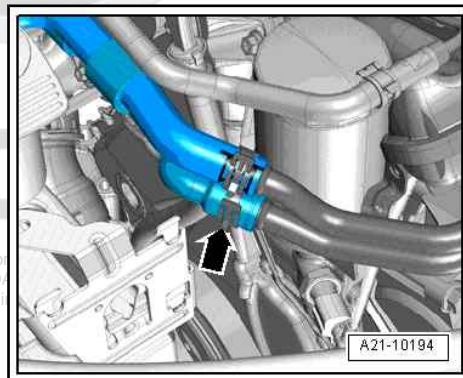
Octavia II 2004 ➤ , Octavia II 2010 ➤ , Superb II 2008 ➤ , Superb II 20 ...

1.8/112; 118 kW; 2.0/147 kW TSI engine - Edition 06.2019

- Release screw -1- and remove oil feed line.

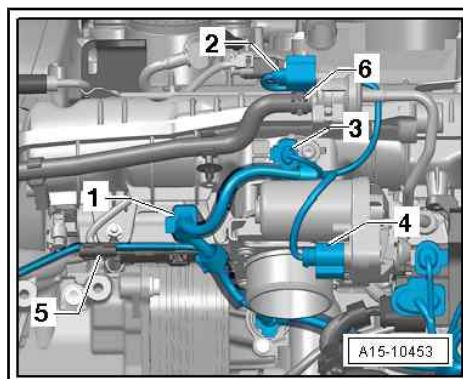


- Disconnect the coolant hose -arrow- and expose.

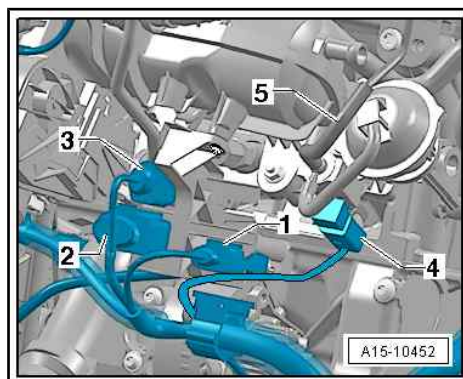


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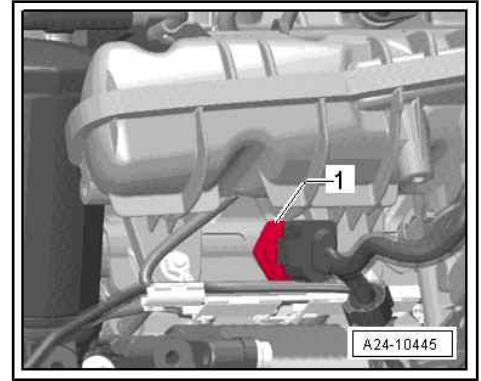
- Remove connectors -1- to -4-.
- Expose line -5-.
- Remove the vacuum line -6- to the activated charcoal filter.



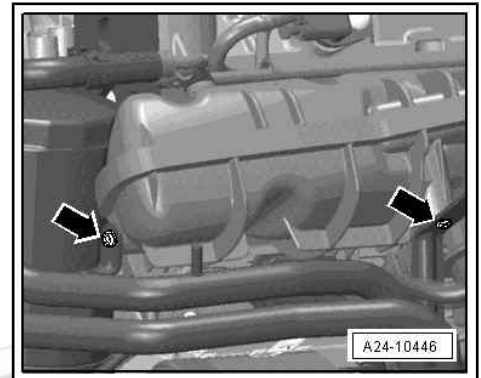
- Disconnect the plug connection -1- and remove the connector from the bracket holder.
- Disconnect connectors -2- to -4-.
- Remove the vacuum line -5-.



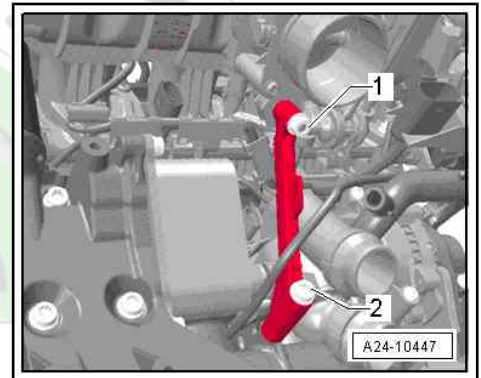
- Remove the connector from the fuel pressure sender - G247-1-.



- Undo screws -arrows- of the coolant line at the intake manifold.



- Unscrew the nuts -1-, unscrew the screw -2- and remove the intake manifold support.

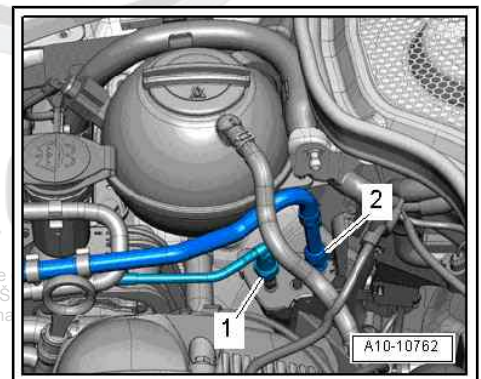


- Remove high pressure pipe -2-
⇒ [“1.3 Separating push-on couplings”, page 215](#) .
- Remove top cover for timing chain
⇒ [“2.2 Removing and installing top cover for timing chain”, page 104](#) .

 NOTICE

The control valve has a left-hand thread.

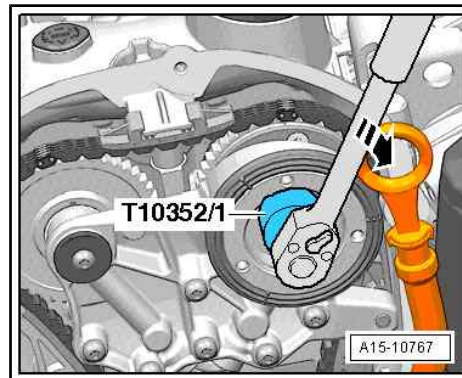
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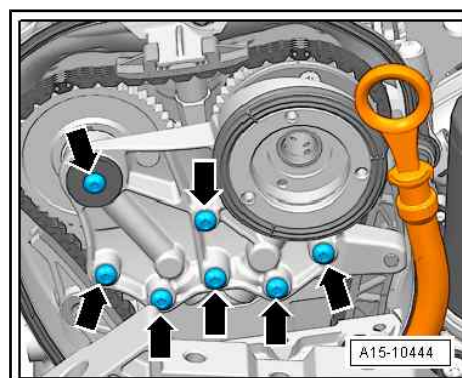


- Remove control valve in -arrow- with assembly tool remove, depending on the version:

- ◆ -T10352/1-
- ◆ -T10352/1A-
- ◆ -T10352/2-
- ◆ -T10352/3-
- ◆ -T10352/4-

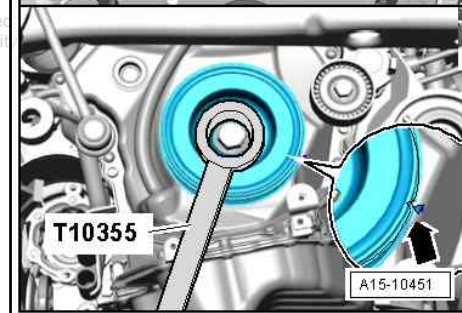
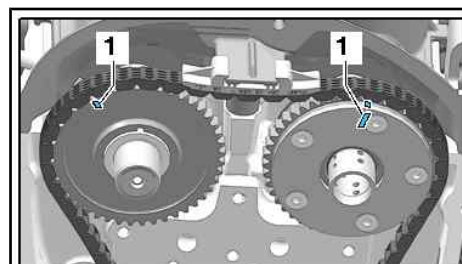


- Unscrew screws -arrows- and remove the bearing frame.

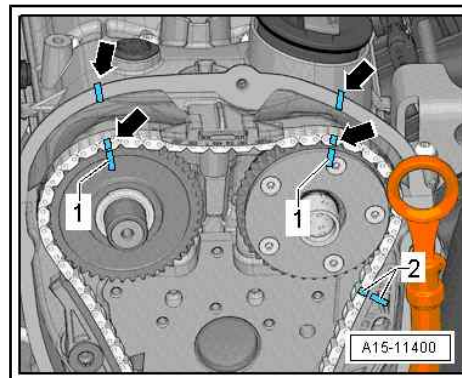


- Turn the V-ribbed belt pulley, crankshaft with the counterholder - T10355- in position "ODT for cylinder 1" -arrow-.
- The markings -1- on the camshaft chain sprockets must point upwards.
- The notch on the crankshaft V-ribbed belt pulley -arrow- and the marking on the cover for the bottom cover for timing chain must face each other.

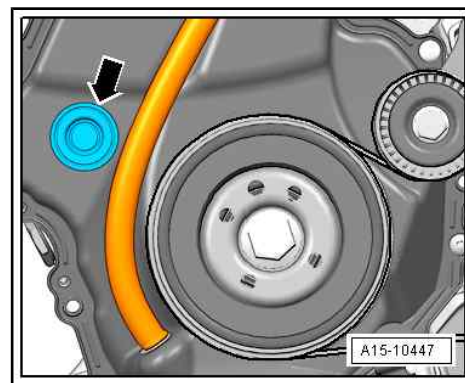
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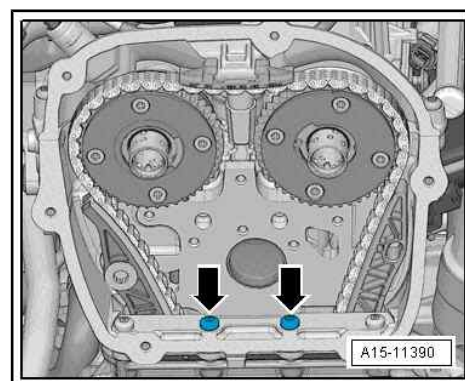
- The mutual position of the camshaft timing shaft/cylinder head cover -arrows- for the markings on the chain sprockets -1- with a waterproof felt-tip pen.
- Mark the mutual position of camshaft timing chain/guide rail -2- with a water-resistant felt tip pen.



- Remove the screw plug -arrow-.

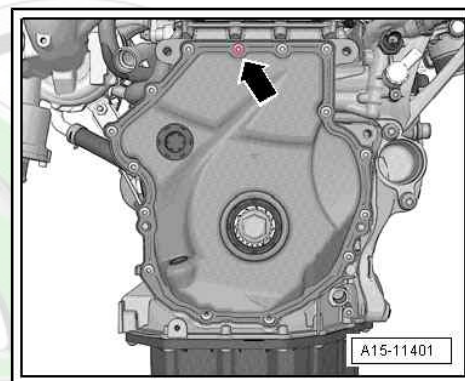


- Remove screws -arrows-.



- Unscrew screw -arrow-.

Depending on the version, two different chain tensioners can be fitted



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Version 1

- Screw on the mounting lever - T40243- -arrows-.



Note

If the lever - T40243- cannot be inserted, the lower cover for the timing chain must be removed

⇒ "2.3 Removing and installing bottom cover for timing chain", page 105.

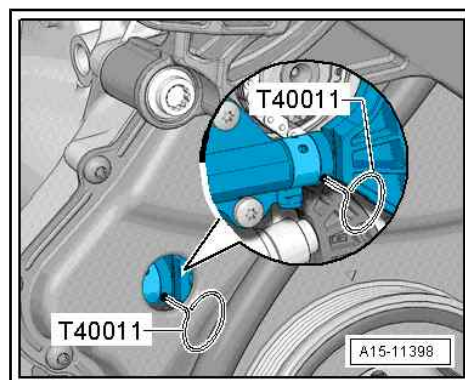
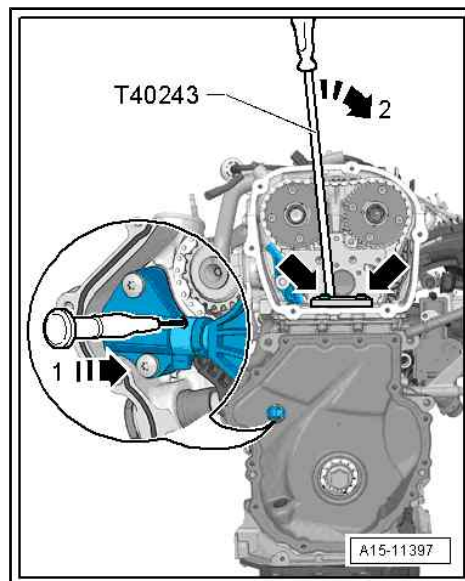
- Using a suitable cross-head screwdriver (approx. 1.5 mm) or with a needle, raise the locking device of the chain tensioner in direction of arrow -1-.



NOTICE

- ♦ **Risk of damage to the chain tensioner! Proceed very carefully.**

- Slowly press the tensioning rail with the lever - T40243- in -direction of arrow 2- and hold in place.
- Secure the chain tensioner using the extractor - T40011- .



Version 2

- Screw on the mounting lever - T40243- -arrows-.

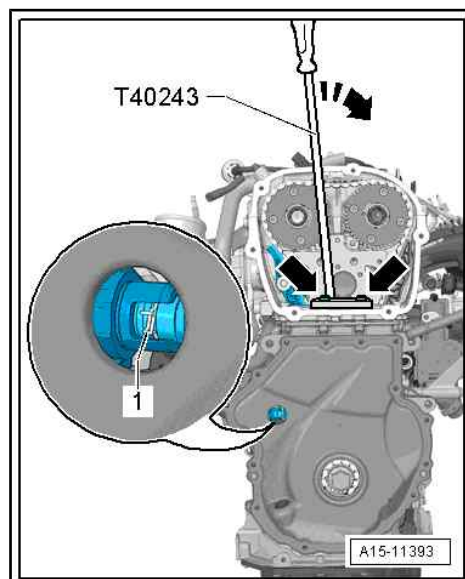


Note

If the lever - T40243- cannot be inserted, the lower cover for the timing chain must be removed

⇒ "2.3 Removing and installing bottom cover for timing chain", page 105.

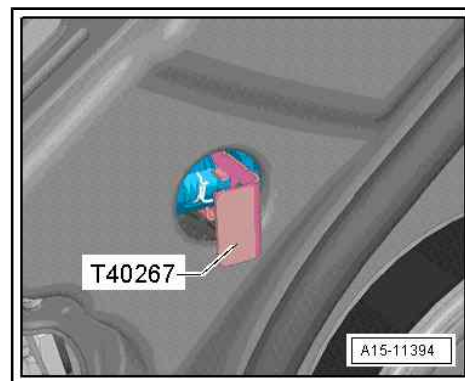
- Press compress circlip -1- of the chain tensioner together, and hold in place.
- Slowly press the assembly lever - T40243- in -direction of arrow- and hold in place.



- Secure the chain tensioner using the extractor - T40267- .

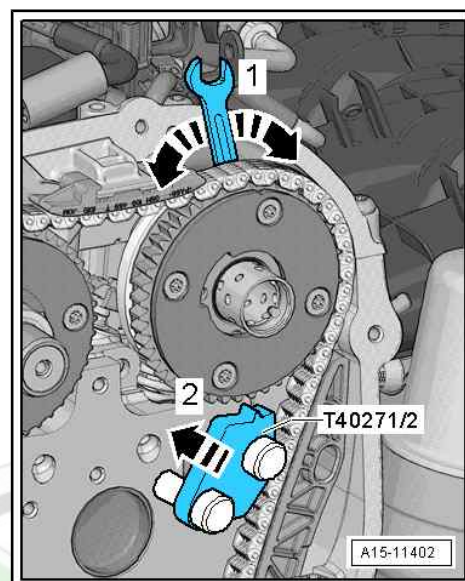
Continued for all vehicles

- Remove lever - T40243- .



- Screw the camshaft clamp - T40271/2- onto the cylinder head and into the gap of the sprocket in the direction of the arrow -2-.

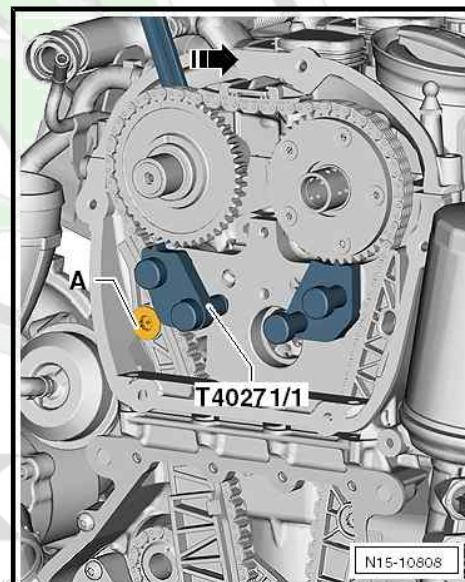
Turn the intake camshaft with the key if necessary -1- until the camshaft clamp - T40271/2- can be pushed in.



- Screw the camshaft clamp - T40271/1- onto the cylinder head.
- Hold the exhaust camshaft in place with a open-end wrench clockwise -arrow-.

A second mechanic is needed for the following work step.

- Remove the screw -A- and remove the tensioning rail; while doing so, continue to hold the camshaft in place.



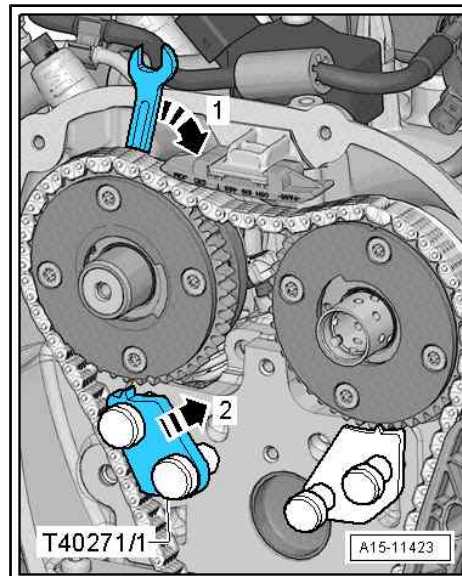
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- Insert the camshaft clamp - T40271/1- into the gap in the chain sprocket in direction of arrow -2-.

Turn the exhaust camshaft with the key if necessary -1- until the camshaft clamp - T40271/1- can be pushed in.

- The camshaft timing shaft must be “loose” between the chain sprockets.

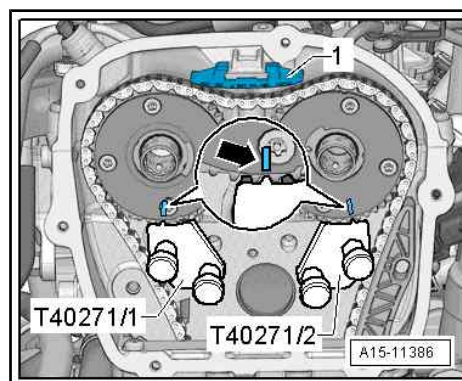


- Using a waterproof felt-tip pen, mark the chain sprockets around the pegs of the camshaft clamps - T40271/1- and - T40271/2- -arrow-.
- Release latches with a screwdriver and remove guide rail -1- forwards.
- Remove the camshaft timing shaft from the chain sprockets.



Note

When the bottom cover for the timing chain is assembled, the loose chain “can” “not” jump the crankshaft sprocket.



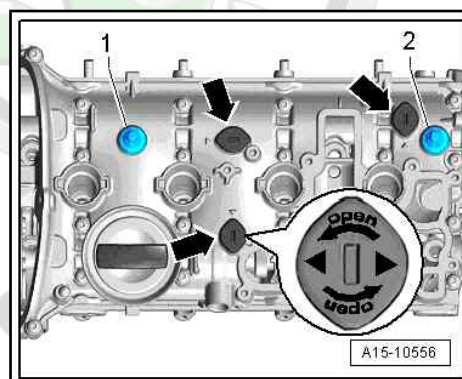
NOTICE

Risk of damaging the valve gear and the bottom cover for timing chain!

- ◆ When the camshaft timing shaft was removed from the chain sprockets, the crankshaft must not be turned further.
- ◆ Plates are attached to the bottom cover for timing chain which prevents the chain from slipping. When the crankshaft is rotated when the chain is more loose, the plates may bend.
- ◆ When turning the crankshaft, the timing chain must be kept tight by hand.

For engines until 11.2013 (1.8 l); until 01.2015 (2.0 l)

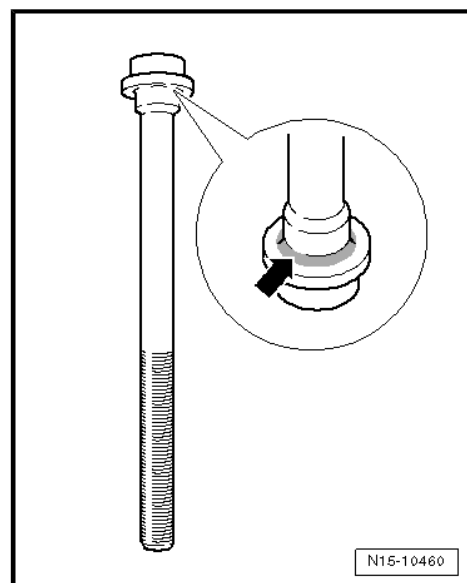
- Rotate the screw plugs -arrows- anti-clockwise by 90° and remove.
- Remove screw plug -1- and -2-.



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i Note

- ◆ 1. Polydrive cylinder head bolts: loosen with the socket insert - T10070- in the specified sequence.
- ◆ 2. Cylinder head collar bolt -arrow-: To release, remove the camshafts
⇒ "4.2 Removing and installing camshafts", page 130 .

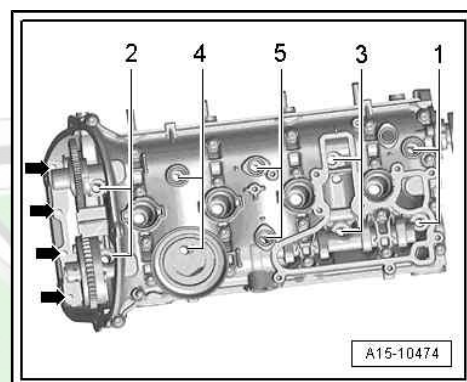


Polydrive screws

- Remove screws -arrows-.
- Loosen all cylinder head bolts with the socket insert - T10070- in the specified sequence.
- Remove cylinder head screws, except for 2, which remain screwed in.

i Note

- ◆ These 2 screws must remain screwed in to secure the cylinder head.
- ◆ To be able to unscrew the cylinder head bolts, rotate the inlet camshaft with the key.



- Check whether all hose- and wiring connections to the engine, gearbox, and the bodyshell.

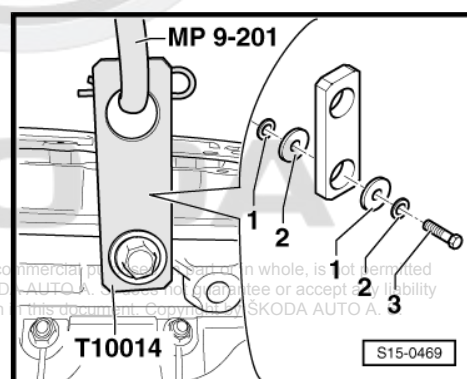
- Attach holder - T10014- each with 2 small and large washers, to the cylinder head as shown in the figure.

1 - Washer M8, small

2 - Washer M8, large The external diameter of the disc must be larger than the bore in the mounting bracket .

3 - Screws M8 x 30

- Hook lifting device - MP9-201 (2024A)- into the mounting bracket - T10014- and the lifting eye to the cylinder head to the front left.





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- Hook the lifting device - MP9-201 (2024A)- into the workshop crane and raise the cylinder head very lightly.
- Remove the last two cylinder head bolts.
- Raise the cylinder head upwards until the sliding rail on the camshaft timing shaft is free.

NOTICE

- ◆ The tensioning and sliding rail must not be damaged under any circumstances.

- Remove cylinder head.
- Place the cylinder head on a clean base (foam).

For engines with cylinder head bolt without service opening from 11.2013 (1.8 l); from 01.2015 (2.0 l)

- Remove the camshafts
⇒ [“4.2 Removing and installing camshafts”, page 130](#) .
- Remove screws -arrows-.
- Remove the cylinder head screws -1- to -10-.



Note

Check whether all hose- and wiring connections to the engine, gearbox, and the bodyshell.

NOTICE

- ◆ The tensioning and sliding rail must not be damaged under any circumstances.

- Remove cylinder head.
- Place the cylinder head on a clean base (foam).

Continued for all versions

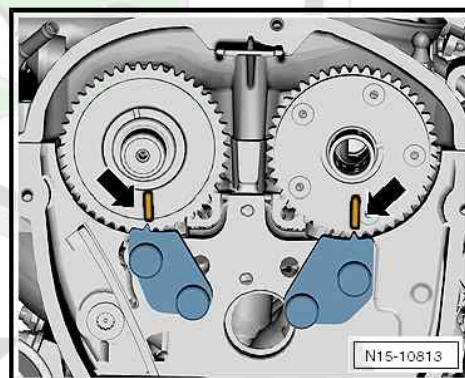
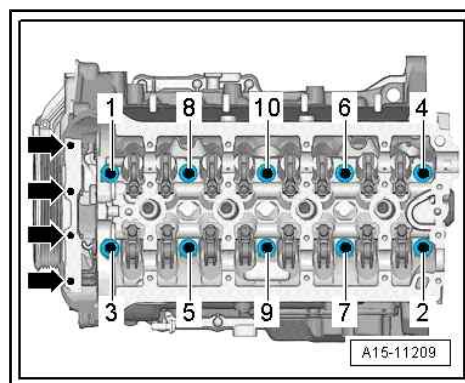
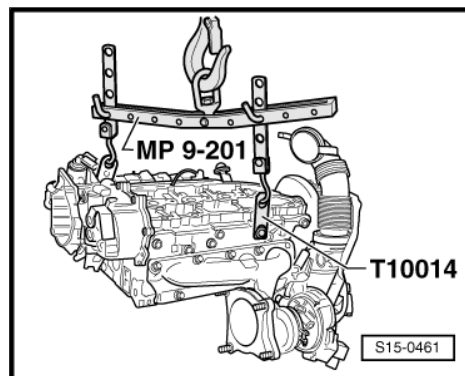
When replacing the camshafts, the markings attached earlier must be transferred. The following work steps are necessary:

- On the removed cylinder head, mark the position of the chain sprockets -arrows- for the locking devices with a waterproof felt-tip pin.

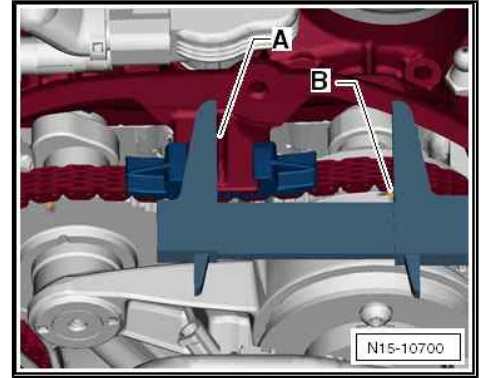


Note

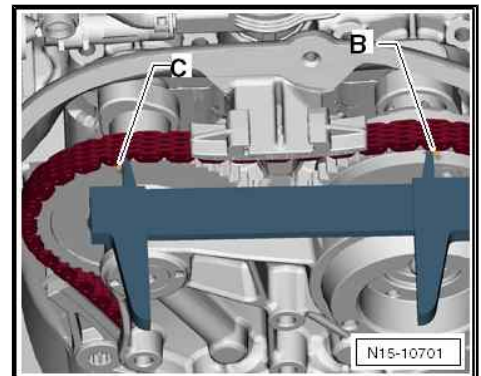
The following measurement of the clearances will be used later in the inspection whether the markings are transferred correctly.



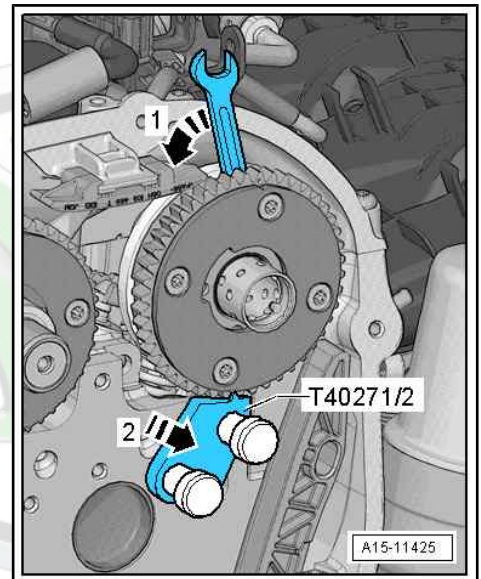
- Measure the distance from the left outer edge of the ledge -A- to the marking -B- on the inlet camshaft sprocket, and note down the value.



- Measure the clearance between the marking -B- on the sprocket and marking -C- on the exhaust camshaft sprocket and note down the value.



- Rotate the inlet camshaft slowly in -direction of arrow 1- until the camshaft clamp - T40271/2- can be removed from the serration of the chain sprocket.
- Put the camshaft in the rest position.
- Remove the camshaft fixer/locator - T40271/2- .

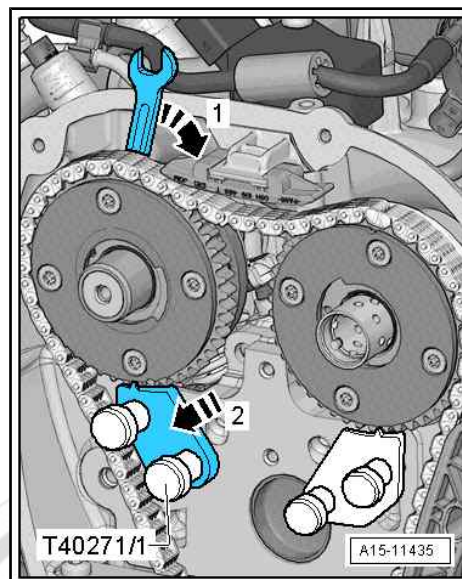


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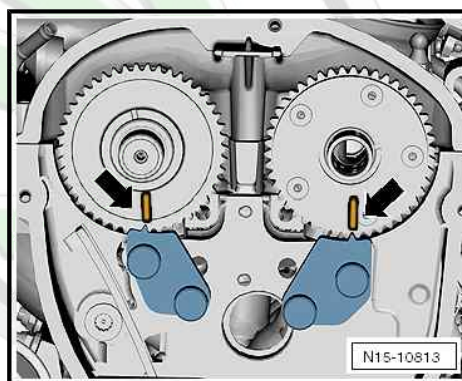
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- Rotate the exhaust camshaft slowly in the -direction of arrow 1- until the camshaft clamp - T40271/1- is removed from the teething of the chain sprocket in - direction of arrow 2-.
- Put the camshaft in the rest position.
- Remove the camshaft fixer/locator - T40271/1- .

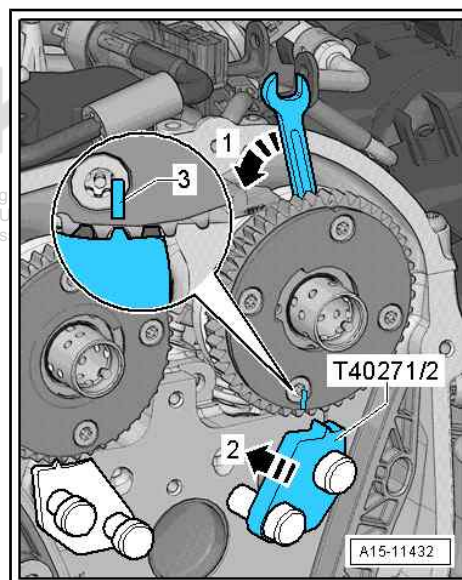


Now, complete the cylinder head to be fitted and transfer markings attached during removal.



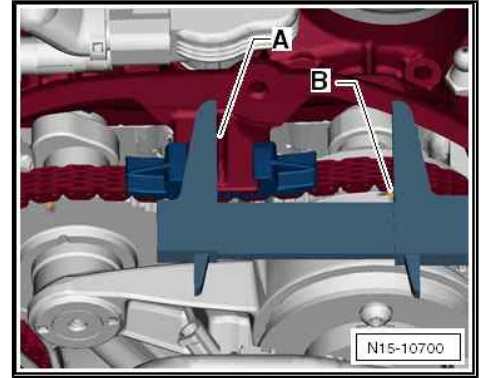
- Screw the camshaft clamp - T40271/2- onto the cylinder head to be installed.
- Turn the inlet camshaft in -direction of arrow 1- until the marking -3- is congruent with the camshaft clamp - T40271/2- .
- Insert the camshaft clamp - T40271/2- into the gap in the chain sprocket in direction of arrow -2-.

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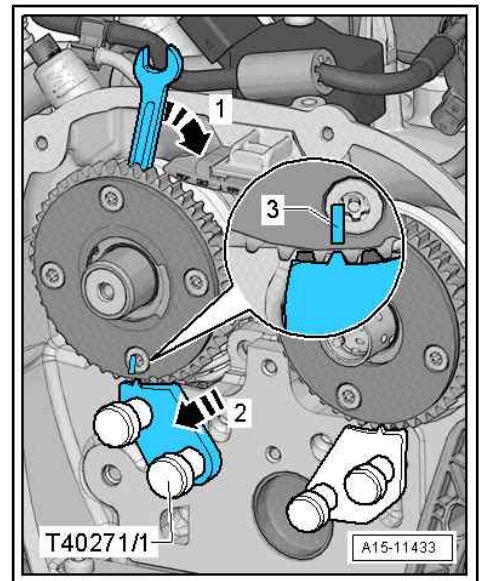


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- Compare the distance from the left outer edge of the ledge -A- to the marking -B- on the inlet camshaft sprocket with the value noted down.



- Screw the camshaft clamp - T40271/1- onto the cylinder head to be installed.
- Turn the exhaust camshaft in -direction of arrow 1- until the marking -3- is congruent with the camshaft clamp - T40271/1- .
- Insert the camshaft clamp - T40271/1- into the gap in the chain sprocket in direction of arrow -2-.



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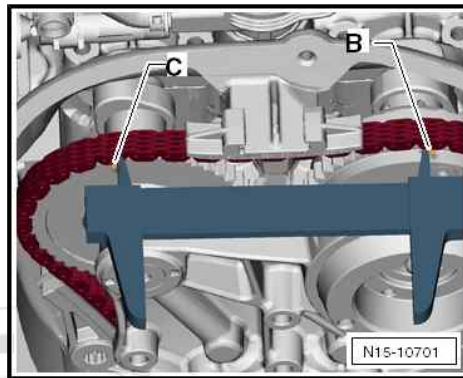
- Compare the clearance between the marking -B- on the inlet camshaft sprocket and marking -C- on the exhaust camshaft sprocket with the value previously noted down.

Installing



Note

- ◆ Replace cylinder head bolts.
 - ◆ When performing installation work replace the self-locking nuts.
 - ◆ Replace screws which have been tightened to a torquing angle as well as gasket rings and seals.
 - ◆ If an exchange cylinder head is installed, all the contact surfaces between the supporting elements, roller rocker arms and the cam tracks must be oiled before the assembly of the cylinder head cover.
 - ◆ Remove the new cylinder head gasket from its wrapping immediately before fitting.
 - ◆ Treat the new cylinder head gasket with the utmost care. Damage to the silicone layer and in the area of the bead results in leakages.
 - ◆ There must not be any oil or coolant present in the holes for the cylinder head bolts.
- Make sure that when cleaning the cylinder head and cylinder block no foreign particles can get into the cylinder or into the oil and coolant galleries.



CAUTION

Wear protective gloves when working with sealant and grease remover!

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The installation occurs in reverse order.

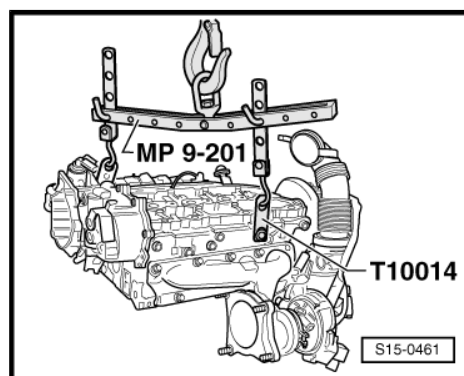
When conducting repairs sealant residues should be removed from the contact surface of the cylinder head/cylinder block using a chemical cleaner.

- Position the new cylinder heads. The legend (part number) must be legible on the inlet end.
- Hang the cylinder head on the workshop crane and position it above the cylinder block.



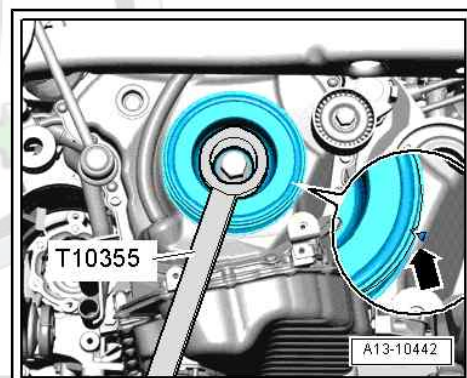
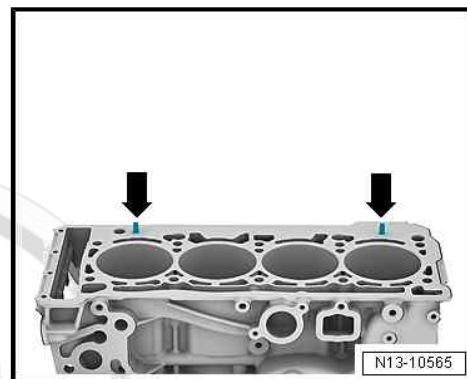
NOTICE

- ◆ Lower the cylinder head carefully.
- ◆ The tensioning and sliding rail must not be damaged under any circumstances.



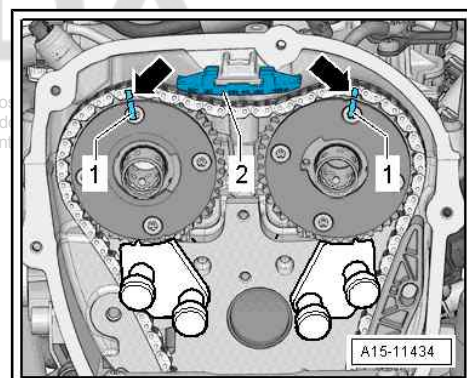
Pay attention to centring pins in cylinder block -arrows-.

- Insert cylinder head bolts and tighten by hand.
- Remove the suspension device for the engine - MP9-201 (2024A)- .
- Tighten the cylinder head bolts
⇒ ["1.1 Summary of components - cylinder head", page 73](#) .
- Install camshafts if removed
⇒ ["4.2 Removing and installing camshafts", page 130](#) .
- Check and turn the V-ribbed belt pulley, crankshaft with counterholder - T10355- in position "ODT for cylinder 1" -arrow-.
- The notch on the crankshaft V-ribbed belt pulley -arrow- and the marking on the cover for timing chain must face each other.



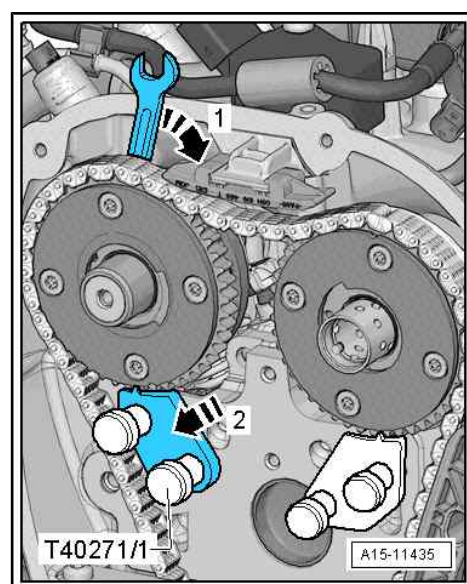
- Place the camshaft timing chain on the camshaft sprockets so that the markings on the chain -arrows- are on the sprocket markings -1-.

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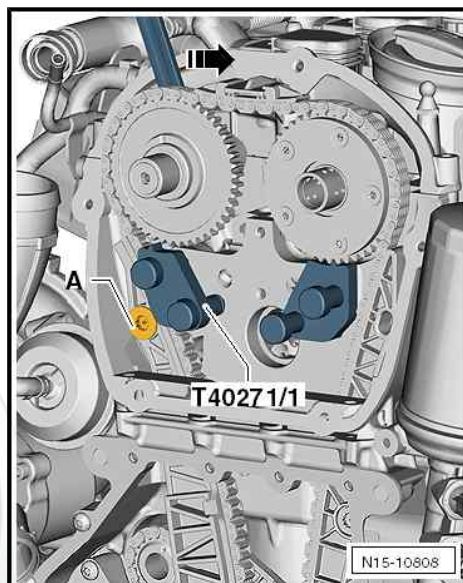
- Rotate the exhaust camshaft slowly in the -direction of arrow 1- until the camshaft clamp - T40271/1- is removed from the teething of the chain sprocket in - direction of arrow 2-.
- Carefully relieve the camshaft until the camshaft timing shaft lies on the top guide rail. Hold the camshaft in place in this position.

A second mechanic is needed for the following work step.

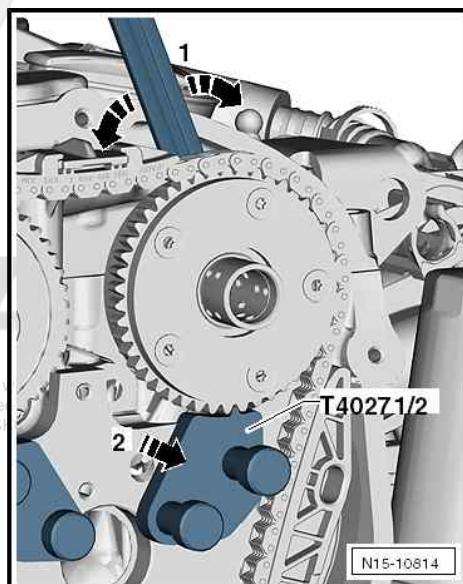




- Install the tensioning rail and tighten the screw -A-.
- Release camshaft.
- Remove the camshaft fixer/locator - T40271/1- .



- Remove the camshaft clamp - T40271/2- out of the serration of the chain sprocket in -direction of arrow 2-, where necessary, turn the inlet camshaft in -direction of arrow 1-.
- Release camshaft.
- Remove the camshaft fixer/locator - T40271/2- .

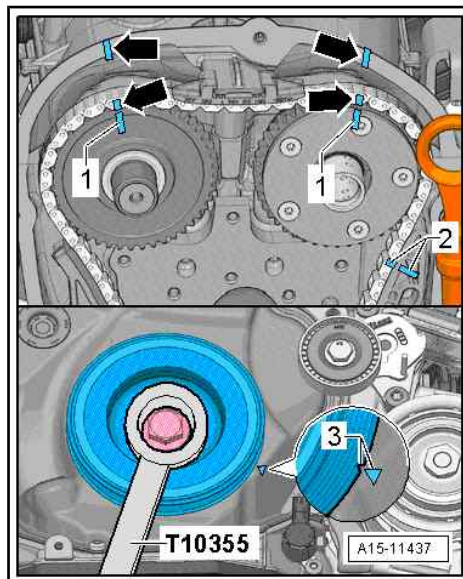


- Check the marks at the camshaft timing chain and cylinder head cover -arrows-, it must coincide with the marks at the chain wheels -1-.
- The markings -2- on the camshaft timing chain and slide rail must match.
- The notch on the V-ribbed belt pulley must face the arrow marking -3- on the bottom cover for the timing chain.



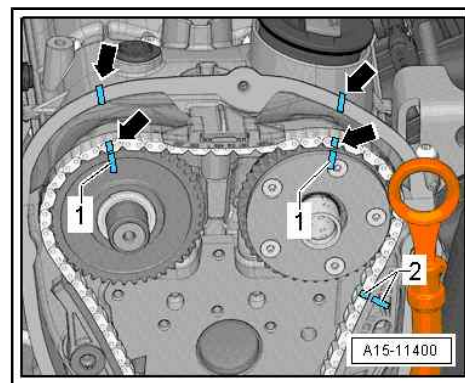
Note

*If the attached markings are no longer visible, check the timing
⇒ "3.3 Checking valve timing", page 126 .*

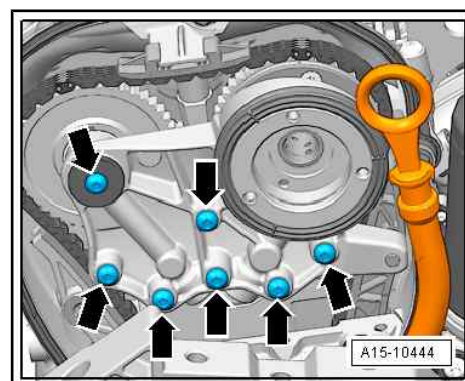


When the markings on the timing chain and slide rail -2- do not match even though the engine is on "OT for cyl. 1" the drive chain is bypassed on the sprocket of the crankshaft.

- Replace camshaft timing chain
⇒ ["3.2 Removing and installing the camshaft timing chain", page 113](#) .



- Carefully insert the bearing frame without jamming
- Insert screws -arrows- by hand.
- Tighten the screws -arrows- for bearing frame.

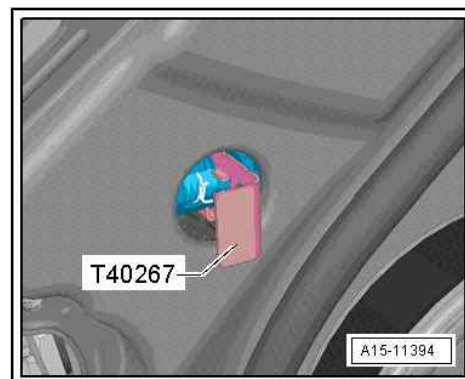


- Depending on the version, remove the rig pin - T40011- or extractor - T40267- .

 NOTICE

Risk of damaging valves and piston crowns after work on the valve gear.

To ensure that no valve is set when starting the engine, turn the crankshaft carefully by at least 2 turns.



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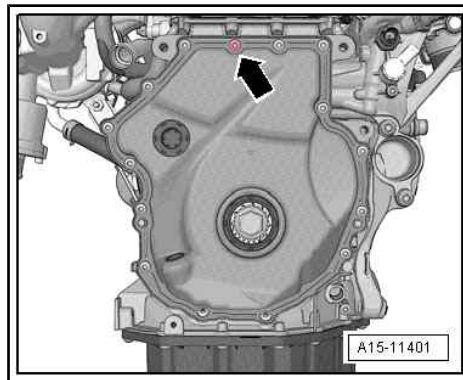
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- Unscrew bolt -arrow-.
- Install control valve (left-hand thread)
⇒ [“3.1 Summary of components - timing chain for camshafts”](#),
[page 112](#) .

Further installation occurs in reverse order. However, pay attention to the following:

- Install top cover for timing chain
⇒ [“2.2 Removing and installing top cover for timing chain”](#),
[page 104](#) .
- Top up coolant
⇒ [“1.3 Draining and filling coolant”](#), [page 179](#) .
- Change engine oil ⇒ Maintenance ; Booklet Octavia II/Superb II/Yeti .



Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Summary of components - timing chain for camshafts
⇒ [“3.1 Summary of components - timing chain for camshafts”](#),
[page 112](#) .
- ◆ Summary of components - cylinder head
⇒ [“1.1 Summary of components - cylinder head”](#), [page 73](#) .
- ◆ Charge air pipe
⇒ [“2.1 Summary of components - charge air cooler”](#),
[page 274](#) .
- ◆ Support for exhaust gas turbocharger
⇒ [“1.1 Summary of components - exhaust gas turbocharger”](#),
[page 256](#) .
- ◆ Crankcase ventilation
⇒ [“1.1 Summary of components - cylinder head”](#), [page 73](#) .
- ◆ Summary of components - exhaust gas turbocharger
⇒ [“1.1 Summary of components - exhaust gas turbocharger”](#),
[page 256](#) .
- ◆ Intake manifold support
⇒ [“2.1 Assembly overview - intake manifold”](#), [page 289](#) .
- ◆ Bottom cover for timing chain
⇒ [“2.1 Summary of components - cover for timing chains”](#),
[page 102](#) .

1.3 Checking compression

Special tools and workshop equipment required

- ◆ Spark plug wrench , e.g. -3122 B-
- ◆ Adapter e.g. -V.A.G 1381/5A-
- ◆ Compression tester , e.g. -V.A.G 1763-

Test conditions

- Engine oil temperature must be at least 30°C.
- Voltage supply o.k.

Test sequence

- Remove the ignition coils with power output stages and the spark plugs
⇒ [“1.2 Removing and installing ignition coils with output stage”, page 342](#) .
- Open lid of the e-box in the engine compartment and unplug the fuse for Motronic - J271- ⇒ Current flow diagrams, Electrical fault finding and Fitting locations current supply relay.



Note

Removing fuse interrupts the voltage supply of the injection valves and ignition coils.

- Check the compression pressure using the compression gauge - V.A.G 1763- and adapter - V.A.G 1381/5A- .



Note

Use of tester ⇒ Owner's Manual .

- Have a second mechanic actuate the starter.
- Operate starter until the tester no longer indicates a pressure rise.

Compression readings

New	Wear limit	Maximum difference between cylinders
1.1...1.4 MPa (11...14 bar)	0.7 MPa (7 bar)	0.3 MPa (3 bar)

If the specified values are not reached, test the combustion chamber for tightness

⇒ [“1.4 Checking the combustion chamber for tightness”, page 99](#) .

Installation occurs in reverse order for removal. However, pay attention to the following:

- Install ignition coils
⇒ [“1.2 Removing and installing ignition coils with output stage”, page 342](#) .
- Interrogate event memory and erase ⇒ Vehicle diagnostic tester.

1.4 Checking the combustion chamber for tightness

Special tools and workshop equipment required

- ◆ Pressure hose - MP1-210 (VW 653/3)- (replace sealing ring with a spark plug sealing ring)

- ◆ Spark plug wrench

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Test sequence

- Unscrew spark plugs
⇒ [“1.1 Assembly overview - ignition system”, page 341](#) .
- Position piston of the relevant cylinder to dead centre.



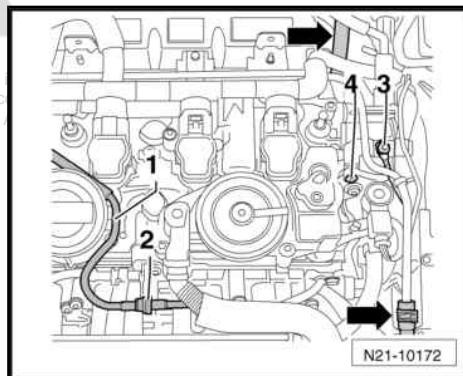
- Screw the pressure hose MP 1-210 into the spark plug thread.
- Connect pressure hose to compressed air.
- With the assistance of a second mechanic, lock the screw at the crankshaft on TDC position in order to avoid the displacement of the piston after pressure build-up.
- Build up a pressure of approx. 0.3 MPa (3 bar) in the combustion chamber.
- Determine how the pressure escapes:
 - 1 - Via the inlet valve(s) - the pressure enters the throttle valve.
 - 2 - Via the outlet valve(s) - the pressure enters the exhaust system.
 - 3 - Via the piston rings - the pressure enters the cylinder block.

1.5 Removing and installing the vacuum pump

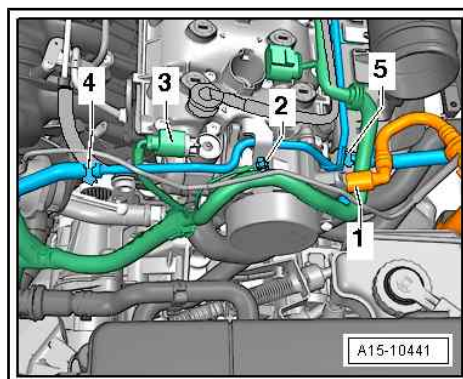
Removing

- Remove engine cover
⇒ ["1.5 Removing and installing engine trim panel", page 21](#) .
- Remove air filter housing
⇒ ["3.2 Removing and installing air filter housing", page 308](#) .
- Remove the high pressure pump "with roller tappet"
⇒ ["4.2 Removing and installing the high pressure pump", page 311](#) .
- Unscrew the earth cable -3- and remove the screw -4-.

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- Detach the vacuum hose -1- from the vacuum pump.



- Release screws -arrows- and remove the vacuum pump.



Note

Dismantling the vacuum pump is not permitted.

Installation occurs in reverse order for removal. However, pay attention to the following:

- Clean sealing surfaces.
- Replace the seal on the vacuum pump, insert 2 screws and afterwards place the gasket on the cylinder head.

Tightening torques - summaries of components

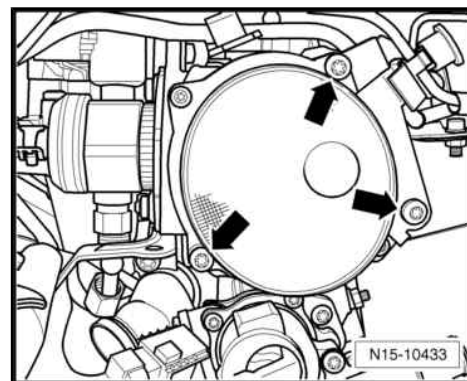


Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

◆ Vacuum pump

⇒ ["1.1 Summary of components - cylinder head", page 73](#) .



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2 Covers for timing chains

⇒ [“2.1 Summary of components - cover for timing chains”, page 102](#)

⇒ [“2.2 Removing and installing top cover for timing chain”, page 104](#)

⇒ [“2.3 Removing and installing bottom cover for timing chain”, page 105](#)

⇒ [“2.4 Replace crankshaft seal on belt pulley side”, page 110](#)

2.1 Summary of components - cover for timing chains



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

1 - O-ring

- ☐ replace
- ☐ Moisten with oil before installing

2 - Guide tube for oil dipstick

3 - Screw

- ☐ 9 Nm

4 - Screw

- ☐ 9 Nm

5 - Camshaft control valve 1 - N205-

- ☐ Removing and installing
⇒ [“4.3 Removing and installing camshaft control valve 1 N205-”, page 147](#)

6 - Sealing ring

- ☐ Moisten with oil before installing
- ☐ replace if damaged

7 - Screw

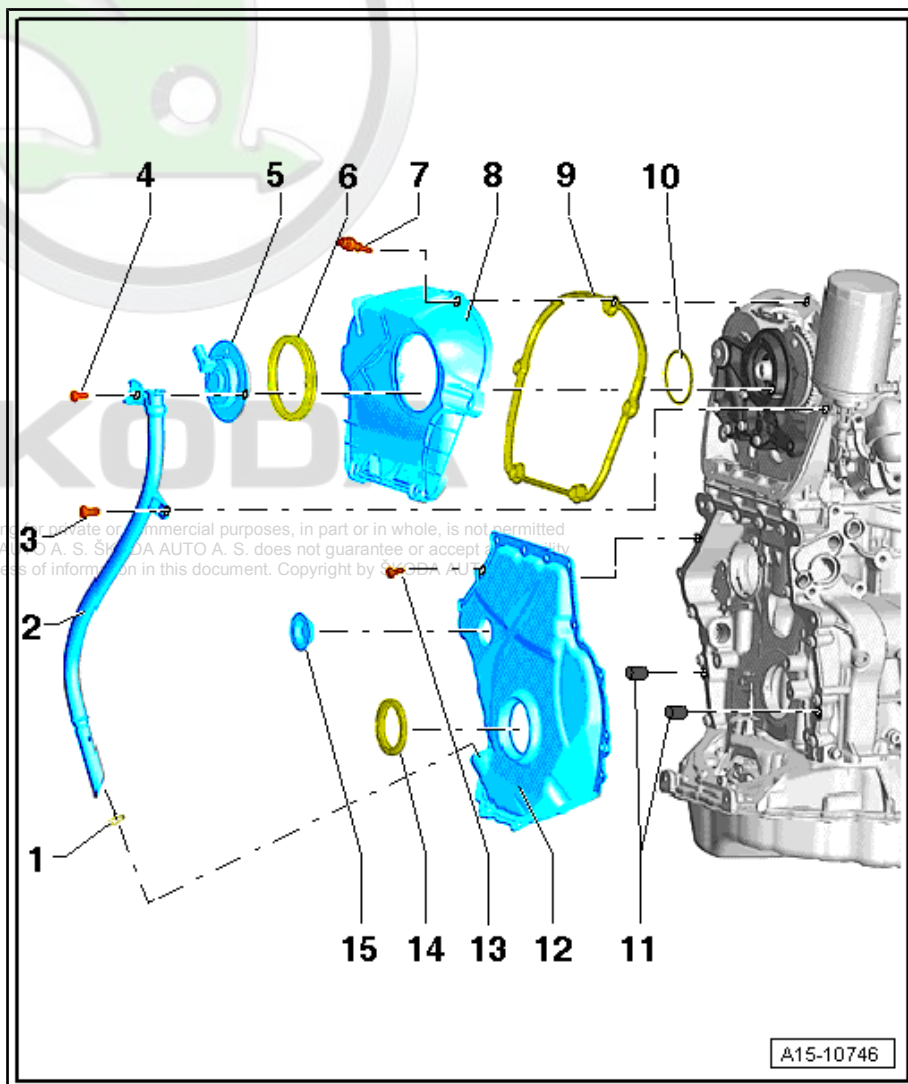
- ☐ Screw captive
- ☐ Tightening torque and tightening order
⇒ [Fig. “Top cover for timing chain - Tightening order”, page 103](#)

8 - Top cover for timing chain

- ☐ Removing and installing
⇒ [“2.2 Removing and installing top cover for timing chain”, page 104](#)

9 - Seal

- ☐ Moisten with oil before installing



A15-10746

- ☐ replace if damaged

10 - O-ring

- ☐ replace
- ☐ Moisten with oil before installing

11 - Dowel pins

- ☐ Centre cover

12 - Bottom cover for timing chain

- ☐ Removing and installing ⇒ [“2.3 Removing and installing bottom cover for timing chain”, page 105](#)

13 - Screw

- ☐ Replace after disassembly
- ☐ Tightening torque and tightening order
⇒ [Fig. ““Install lower cover for timing chain - tightening order””, page 103](#)

14 - Sealing ring

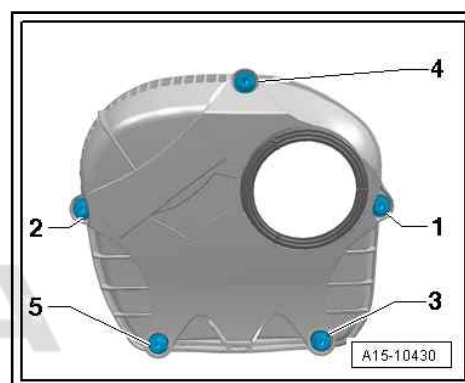
- ☐ for crankshaft
- ☐ Replace ⇒ [“2.4 Replace crankshaft seal on belt pulley side”, page 110](#)

15 - Plug

- ☐ replace

Top cover for timing chain - Tightening order

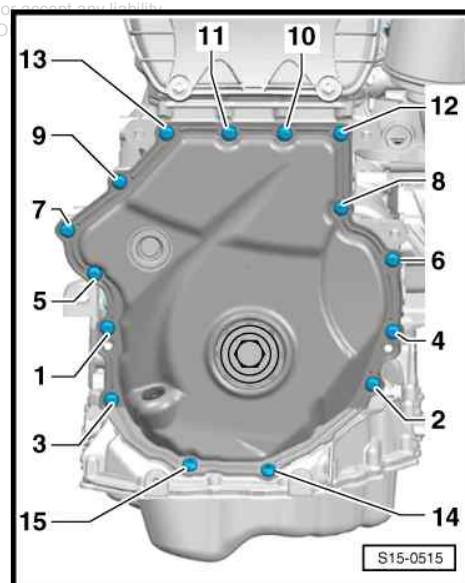
- Tighten screws -1- to -5- in two stages, as follows:
- 1. Tighten bolts hand-tight.
- 2. Tighten screws to 9 Nm.



Install lower cover for timing chain - tightening order

- Tighten all bolts fully in the given sequence:

Level	Screws	Tightening torque/torque angle
1	-1- to -15-	Tighten by hand as far as the stop
2	-1- to -15-	8 Nm
3	-1- to -15-	Turn 45° further

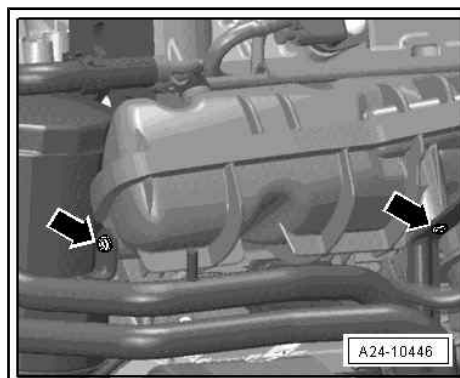




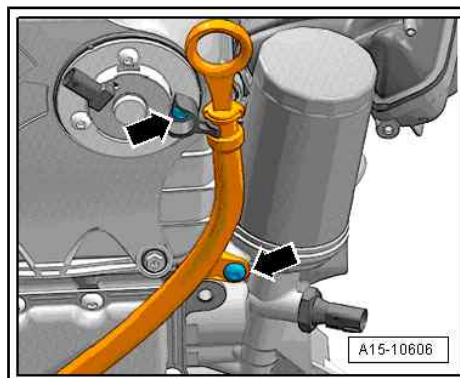
2.2 Removing and installing top cover for timing chain

Removing

- Unscrew screws -arrows- for the coolant hoses on the intake manifold, press to one side and secure to the engine bracket with a cable clamp.



- Unscrew the screws for the guide pipe for dipstick -arrows-.
- Remove camshaft control valve 1 - N205-
⇒ [“4.3 Removing and installing camshaft control valve 1 N205”](#), page 147 .



- Release screws -1- to -5- and remove top cover for timing chain.



Note

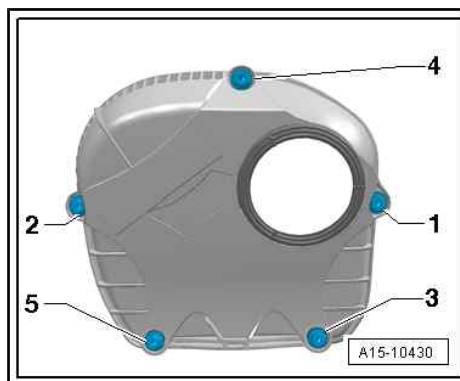
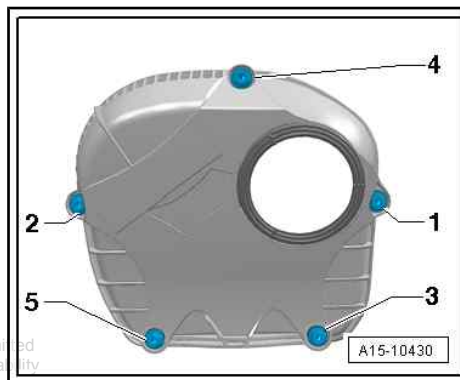
Remove screws -3- and -5- with an open-end wrench.

Installing

The installation occurs in reverse order. However, pay attention to the following:

Ensure proper seating of gasket.

- Tighten screws -1- to -5-
⇒ [Fig. “Top cover for timing chain - Tightening order”](#), page 103 .
- Install camshaft control valve 1 - N205-
⇒ [“4.3 Removing and installing camshaft control valve 1 N205”](#), page 147 .



- Tighten the screws for the guide pipe for dipstick -arrows-.

Further installation occurs in reverse order.

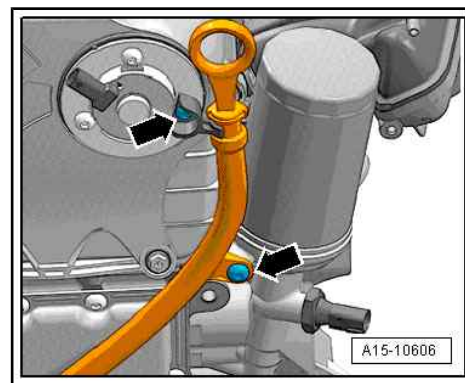
Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Summary of components
⇒ ["2.1 Summary of components - cover for timing chains", page 102](#) .



2.3 Removing and installing bottom cover for timing chain

Special tools and workshop equipment required

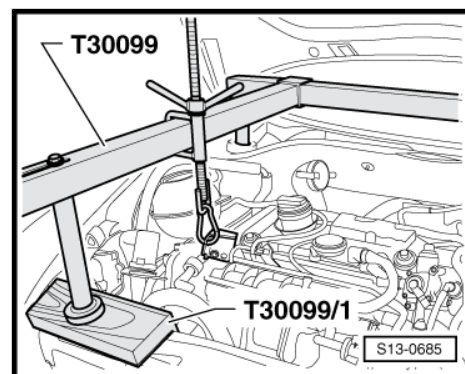
- ◆ Thrust piece - T10368-
- ◆ Bits XZN 12 - T10099-
Practical use of this tool for private or commercial purposes, in part or in whole, is not permitted unless authorised by SKODA AUTO A. S. SKODA AUTO A. S. does not guarantee or accept any liability with the use of this tool in any other way than intended by SKODA AUTO A. S.
- ◆ Supporting device - MP9-200 (10-222A)- (Superb II)
- ◆ Support bracket - T30099- (Octavia II and Yeti)
- ◆ Surface - T30099/1- (Octavia II and Yeti)
- ◆ Protective goggles
- ◆ Protective gloves
- ◆ Feeler gauge
- ◆ Silicone sealant ⇒ ETKA - Electronic catalogue of original parts
- ◆ Cleaning and degreasing agent , e.g. -D 009 401 04-
- ◆ Sealant remover Gasket Stripper (stock code GST, stock item No. R 34402), manufacturer Retech s.r.o.

Removing

- Drain off engine oil.
- Remove V-ribbed belt pulley from crankshaft
⇒ ["1.5 Removing and installing vibration dampener", page 37](#) .

For vehicles Octavia II and Yeti

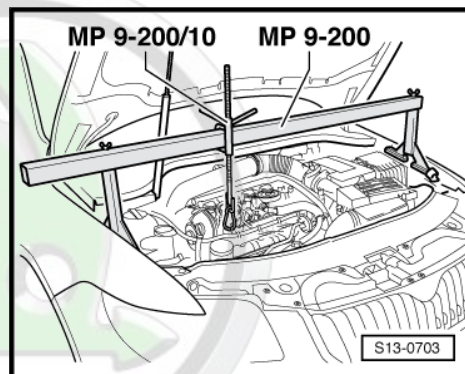
- Remove plenum chamber cover ⇒ Body Work; Rep. gr. 66 .
- Fit supporting device - T30099- with surface - T30099/1- and support engine in fitting position.





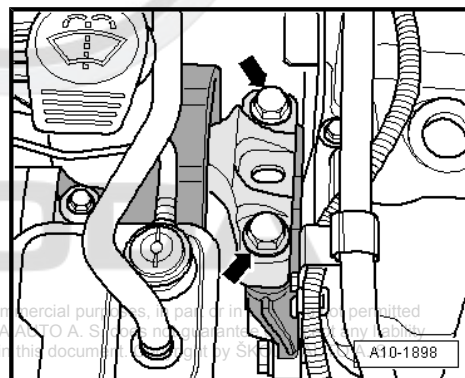
For the vehicles Superb II

- Fit supporting device - MP9-200 (10-222A)- , suspend engine from the right lifting eye with hooks - MP9-200/10 (10-222A/10)- and pre-load using spindles, but do not raise.

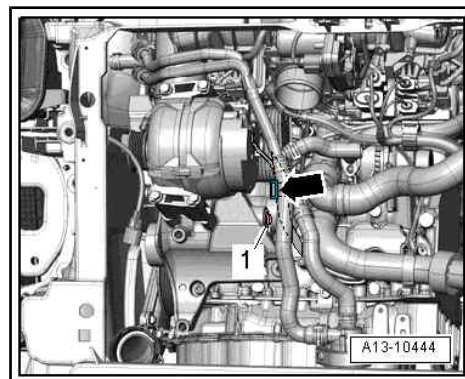


Continued for all vehicles

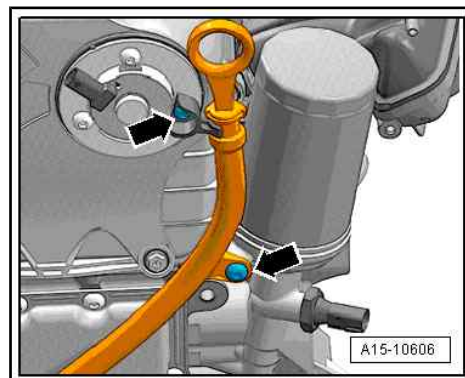
- Release screws -arrows- from engine bracket.
- Remove engine mounts
⇒ ["2.1 Summary of components - assembly mountings", page 22](#) .
- Unscrew the lower bolts for engine support with bits - T10099- .
- Raise engine approx. 105 mm with the spindle (approx. 50 mm from the fitting position).
- Unscrew top screw for engine support.
- Remove engine support with inserted bolts.



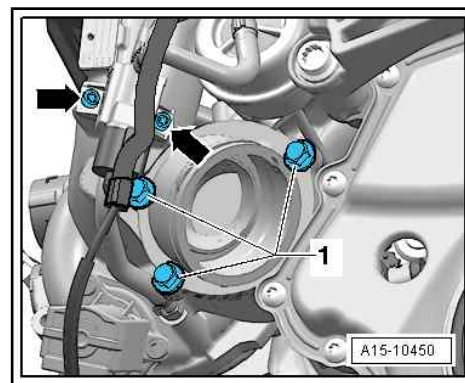
- Expose wiring loom -arrows-.
- Release screw -1- and pull off tensioning pulley for poly V-belt from the bracket for the auxiliary units.
- Remove the bracket for auxiliary units
⇒ ["1.4 Removing and installing bracket for auxiliary units", page 35](#) .



- Unscrew the screws -arrows- and remove guide pipe for dipstick from the bottom cover for timing chain.



- Unscrew the charge pressure control solenoid valve - N75- from the turbocharger -arrows-. Unscrew screws -1- (9 Nm) as needed and remove turbocharger connector.



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SKODA

Octavia II 2004 ➤ , Octavia II 2010 ➤ , Superb II 2008 ➤ , Superb II 20 ...

1.8/112; 118 kW; 2.0/147 kW TSI engine - Edition 06.2019

- Unscrew the screws -1- to -15-.
- Cut through the sealant with a sharp flat spatula at the accessible places all the way around the bottom cover for the timing chain.
- Carefully, and in stages, pry open the bottom cover for timing chain with a spatula to prevent it from being deformed.
- Carefully, and in stages, pry open the bottom cover for timing chain with a spatula to prevent it from being deformed.

Installing



Note

- ♦ Pay attention to the use by date on silicone sealant.
- ♦ The bottom cover for the timing chain must be installed within 5 minutes after applying the sealant.
- ♦ Replace screws which have been tightened to a torquing angle.
- ♦ Replace the sealing rings, seals and self-locking nuts.
- Remove the gasket ring for crankshaft V-ribbed belt pulley from the bottom cover for timing chain.



CAUTION

Wear protective gloves when working with sealant and grease remover!

- Remove residual sealant from the sealing surfaces on the cylinder block, upper part of the oil sump, and on the bottom cover with chemical sealant remover.
- Degrease the sealing surfaces.

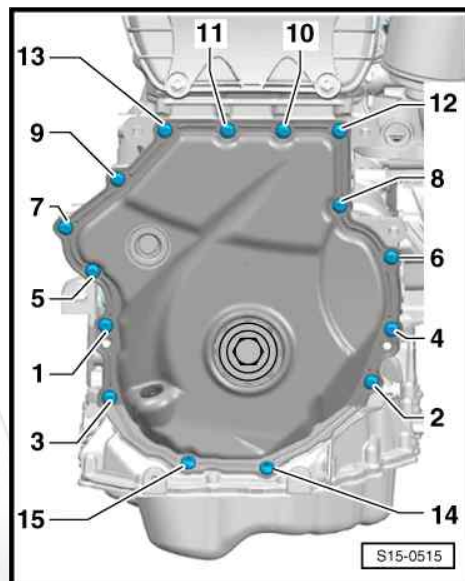
Check bottom cover for timing chain for evenness

- Install the bottom cover for timing chain with old bolts and tighten 8 Nm.
- Using the feeler gauge, check the clearance between bottom cover for timing chain and cylinder block.
- The clearance must not be larger than 0.2 mm.



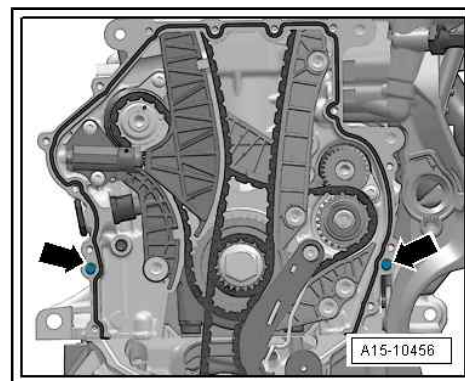
Note

- ♦ If the distance is more than 0.2 mm: Replace bottom cover for timing chain.
- ♦ Do not measure the clearance between the cover and the upper part of the oil sump. To do so, carry out a visual inspection to check the evenness of the sealing flange.

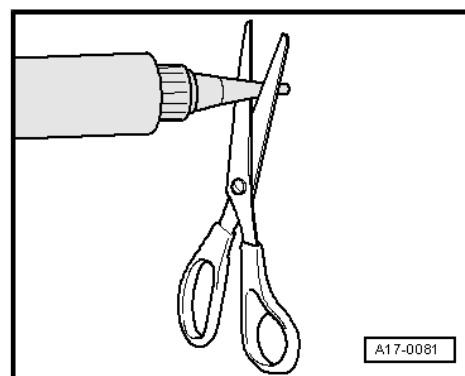


Install below cover for timing chain

- Check whether both fitted pins -arrows- are present for centering the bottom cover for timing chain.



- Cut off nozzle tube at the front marking (Ø of nozzle approx. 3 mm).



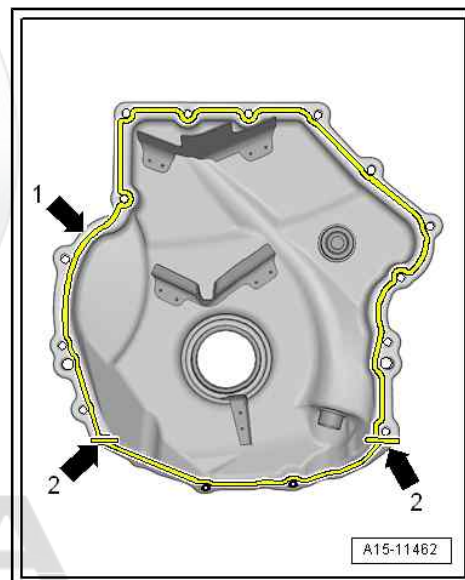
- Apply the silicone sealant to the clean sealing surface of the bottom cover for timing chain arrow -1- and to the edges arrow -2- as shown in the figure.

- ◆ Thickness of sealant bead: 2-3 mm.



Note

- ◆ *The bottom cover for the timing chain must be installed within 5 minutes after applying the sealant.*
- ◆ *The sealant bead must not be thicker than specified otherwise excess sealant may get into the oil sump and clog the strainer in the oil suction pipe.*



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- Fit bottom cover for timing chain immediately and tighten the new screws -1- to -15- in the sequence shown
⇒ [Fig. ““Install lower cover for timing chain - tightening order””, page 103](#) .

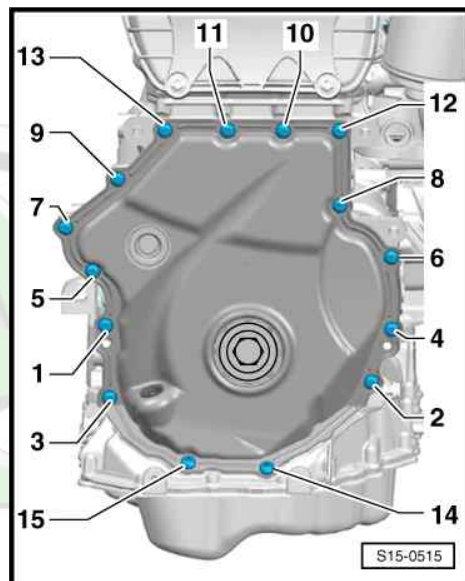


Note

Let sealant dry for approx. 30 minutes after installing cover. Only then fill with engine oil.

Further installation occurs in reverse order. However, pay attention to the following:

- Install tensioning pulley for V-ribbed belt
⇒ [“1.3 Removing and installing tensioning pulley for V-ribbed belt”, page 32](#) .
- Adjusting the assembly bracket:
- ♦ Octavia II, Yeti
⇒ [“2.3.1 Adjusting the assembly mountings, Octavia II, Yeti”, page 24](#) .
- ♦ Superb II
⇒ [“2.3.2 Setting the assembly bracket, Superb II”, page 26](#) .
- Fill engine oil ⇒ Maintenance ; Booklet Octavia II/Superb II/Yeti .



Tightening torques - summaries of components



Note

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Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ♦ Engine mounting
⇒ [“2.1 Summary of components - assembly mountings”, page 22](#) .
- ♦ Tensioning pulley for V-ribbed belt
⇒ [“1.1 Assembly overview - V-ribbed belt drive”, page 29](#) .
- ♦ Tube for dipstick
⇒ [“2.1 Summary of components - cover for timing chains”, page 102](#) .
- ♦ Bottom cover for timing chain
⇒ [“2.1 Summary of components - cover for timing chains”, page 102](#) .
- ♦ Solenoid valve for charge pressure control - N75-
⇒ [“1.1 Summary of components - exhaust gas turbocharger”, page 256](#) .

2.4 Replace crankshaft seal on belt pulley side

Special tools and workshop equipment required

- ♦ Thrust piece - T10354-
- ♦ Thrust piece - T10368-
- ♦ Extractor hook - T40274-
- ♦ Assembly tool - T10531/4-

Removing

- Remove V-ribbed belt pulley from crankshaft
⇒ [“1.5 Removing and installing vibration dampener”, page 37](#) .
- The assembly tool - T10531/2- is inserted.
- Pull sealing ring -arrow- with extractor hook - T40274- out of the timing case.

Installing

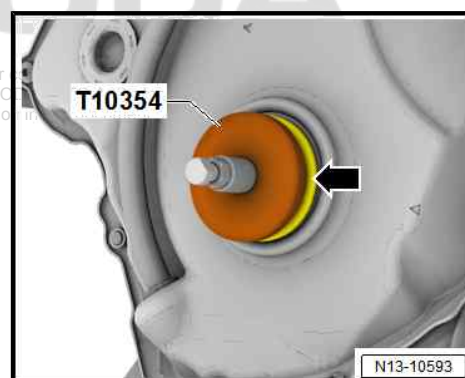
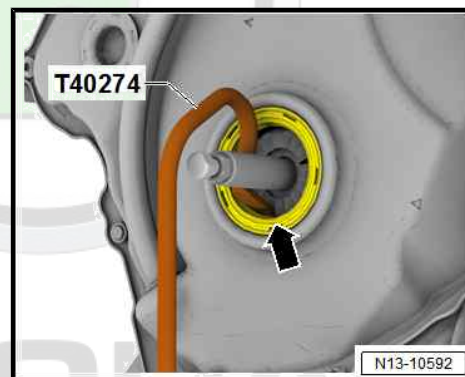
- Clean the bottom cover for the timing chain in the area of the sealing ring seat. It must be free of oil and grease.



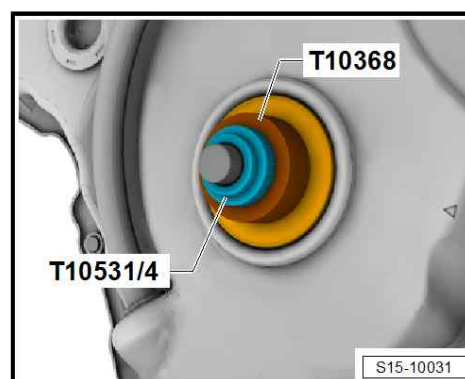
Note

Always use a new sealing ring. Moisten with oil before the assembly.

- Insert the sealing ring -arrow- with thrust piece - T10354- into the timing case.



- Push on the thrust piece - T10368- and tighten the assembly tool - T10531/4- as far as it can go.
- Remove the assembly tool - T10531/4- , thrust piece - T10368- and thrust piece - T10354- .
- Installing the V-ribbed belt pulley crankshaft
⇒ [“1.5 Removing and installing vibration dampener”, page 37](#) .





3 Chain drive

⇒ ["3.1 Summary of components - timing chain for camshafts", page 112](#)

⇒ ["3.2 Removing and installing the camshaft timing chain", page 113](#)

⇒ ["3.3 Checking valve timing", page 126](#)

3.1 Summary of components - timing chain for camshafts



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

1 - Screw

- ☐ 9 Nm

2 - Chain tensioner

- ☐ is under spring tension
- ☐ Depending on the version, and before disassembly, remove rig pin - T40011- or extractor - T40267-

3 - Tensioning rail

4 - Guide bolt

- ☐ 20 Nm

5 - Screw

- ☐ 9 Nm

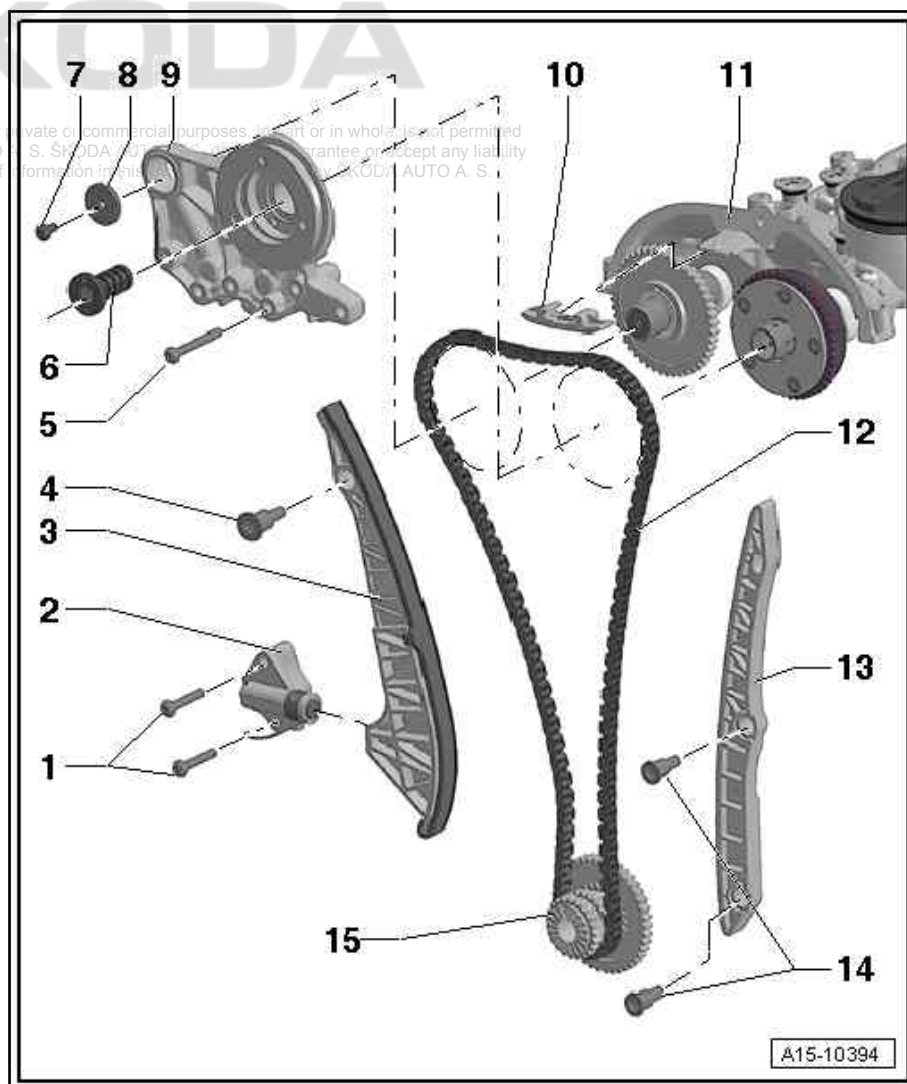
6 - Control valve

- ☐ Left-hand thread
- ☐ Check
⇒ [Fig. "Check the control valve", page 113](#)
- ☐ Remove with assembly tool, depending on model:

- ◆ -T10352/1-
- ◆ -T10352/1A-
- ◆ -T10352/2-
- ◆ -T10352/3-
- ◆ -T10352/4-
- ☐ 35 Nm

7 - Screw

- ☐ Replace after disassembly
- ☐ M6 thread: 8 Nm + 90°
- ☐ M8 thread: 20 Nm + 90°



8 - Thrust washer

9 - Bearing frame

10 - Sliding rail

11 - Cylinder head cover

12 - Camshaft timing chain

- ☐ mark the direction of rotation in colour before removing
- ☐ Removing and installing ⇒ [“3.2 Removing and installing the camshaft timing chain”, page 113](#)

13 - Sliding rail

14 - Guide bolt

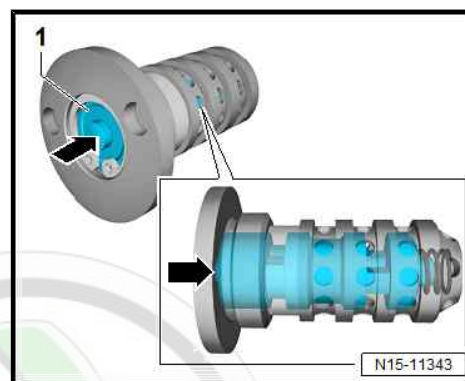
- ☐ 20 Nm

15 - Sprocket

- ☐ at the crankshaft
- ☐ Fitting position ⇒ [Fig. “Chain sprocket to crankshaft - fitting position”, page 113](#)

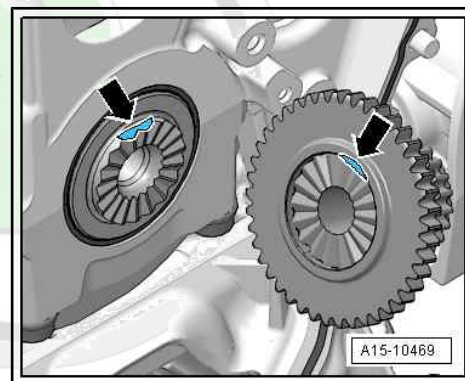
Check the control valve

- The piston -1- must be pressed about 3 mm against the spring force. Keep the piston sequence.



Chain sprocket to crankshaft - fitting position

- The two surfaces -arrows- must face each other.



3.2 Removing and installing the camshaft timing chain

Special tools and workshop equipment required

- ◆ Assembly tool - T10352- , depending on version:
- ◆ -T10352/1-
- ◆ -T10352/1A-
- ◆ -T10352/2-
- ◆ -T10352/3-
- ◆ -T10352/4-
- ◆ Rig pin - T40011-

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- ◆ Counterholder - T40267-
- ◆ Counterholder - T10355-
- ◆ camshaft clamp - T40271-
- ◆ Lever - T40243-
- ◆ Assembly tool - T10531-

Removing

- Remove top cover for timing chain
⇒ ["2.2 Removing and installing top cover for timing chain", page 104](#).

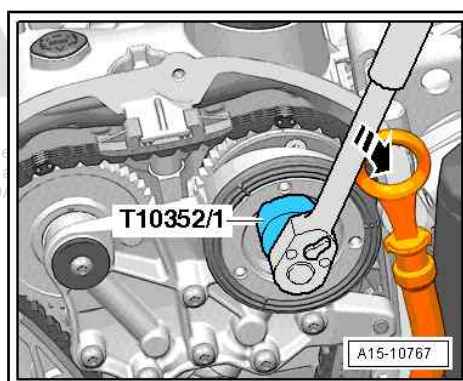


NOTICE

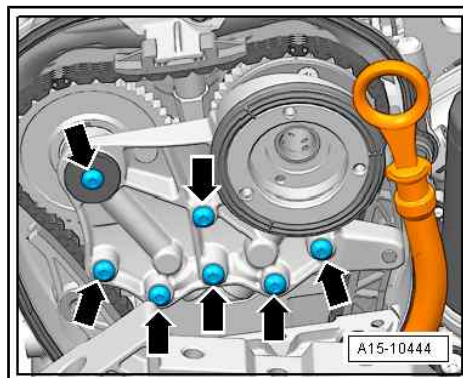
The control valve has a left-hand thread.

- Remove control valve in -arrow- with assembly tool remove, depending on the version:

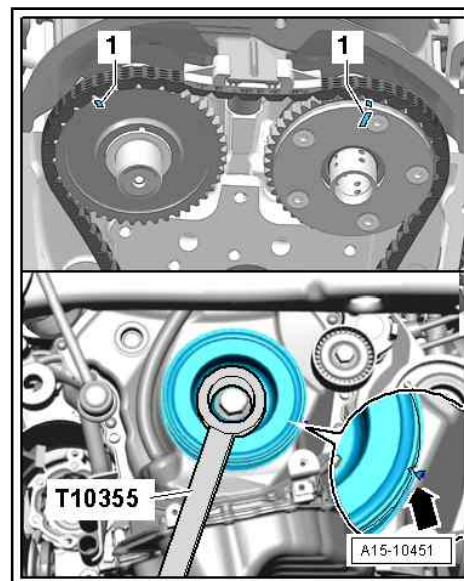
- ◆ -T10352/1-
- ◆ -T10352/1A-
- ◆ -T10352/2-
- ◆ -T10352/3-
- ◆ -T10352/4-



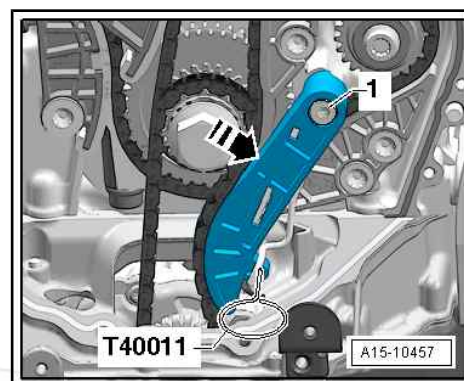
- Unscrew screws -arrows- and remove the bearing frame.



- Turn the V-ribbed belt pulley, crankshaft with the counterholder - T10355- in position “ODT for cylinder 1” -arrow-.
- The markings -1- on the camshaft chain sprockets must point upwards.
- The notch on the crankshaft V-ribbed belt pulley -arrow- and the marking on the cover for the bottom cover for timing chain must face each other.
- Remove bottom cover for timing chain
⇒ [“2.3 Removing and installing bottom cover for timing chain”, page 105](#) .

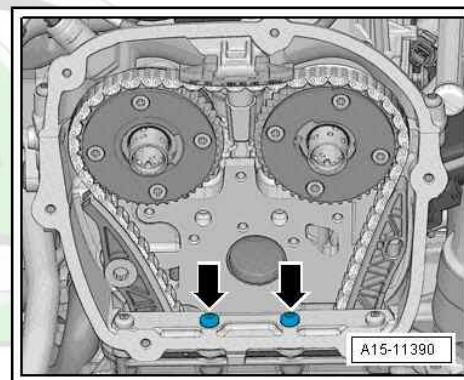


- Press the chain tensioner of the oil pump in -direction of arrow- and lock it with the locking pin - T40011- .
- Remove screw -1- and oil pump chain tensioner.



- Remove screws -arrows-.

Depending on the version, two different chain tensioners can be fitted



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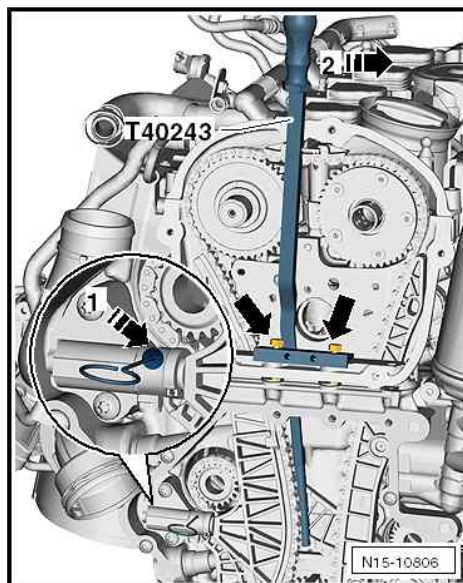
Version 1

- Screw on the mounting lever - T40243- -arrows-.
- Using a suitable cross-head screwdriver (approx. 1.5 mm) or with a needle, raise the locking device of the chain tensioner in direction of arrow -1-.

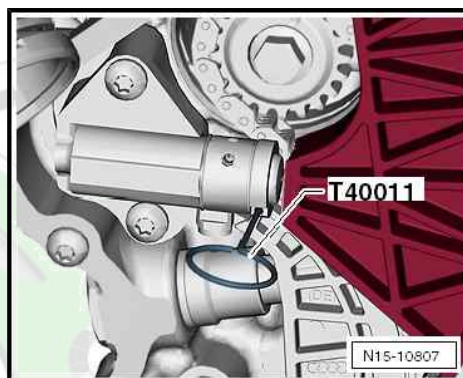
NOTICE

- ♦ **Risk of damage to the chain tensioner! Proceed very carefully.**

- Slowly press the tensioning rail with the lever - T40243- in -direction of arrow 2- and hold in place.

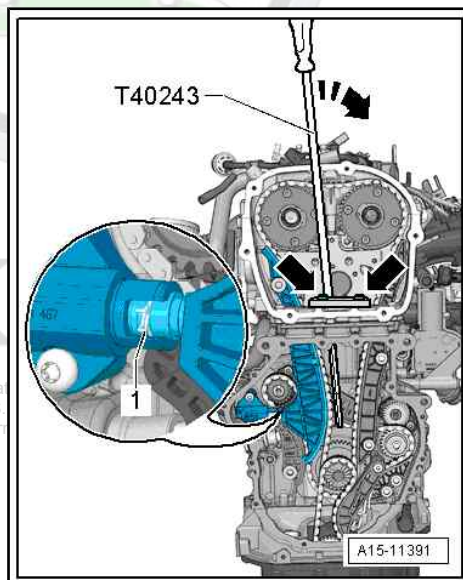


- Secure the chain tensioner using the extractor - T40011- .



Version 2

- Screw on the mounting lever - T40243- -arrows-.
- A second mechanic is needed for the following work steps.
- Press compress circlip -1- of the chain tensioner together, and hold in place.
 - Slowly press the assembly lever - T40243- in -direction of arrow- and hold in place.



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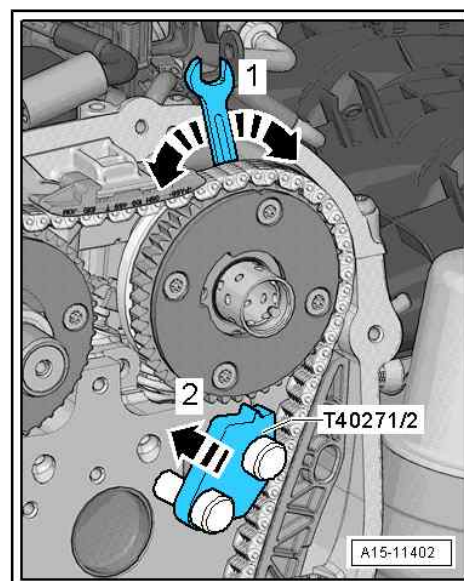
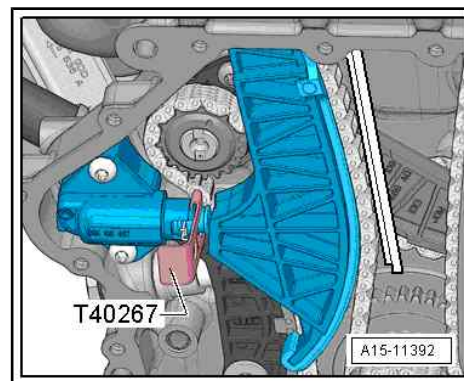
- Secure the chain tensioner using the extractor - T40267- .

Continued for all vehicles

- Remove lever - T40243- .

- Screw the camshaft clamp - T40271/2- onto the cylinder head and into the gap of the sprocket in the direction of the arrow -2-.

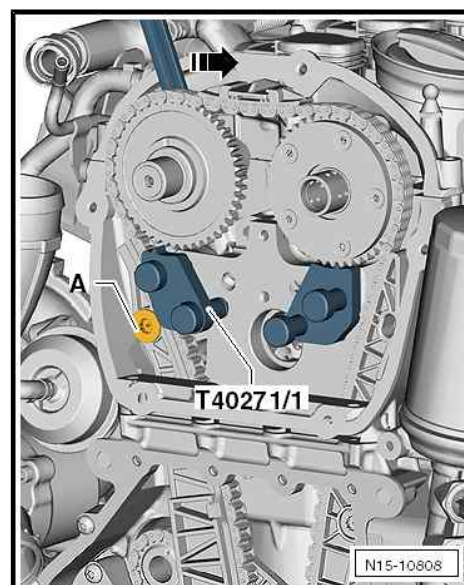
Turn the intake camshaft with the key if necessary -1- until the camshaft clamp - T40271/2- can be pushed in.



- Screw the camshaft clamp - T40271/1- onto the cylinder head.
- Hold the exhaust camshaft in place with a open-end wrench clockwise -arrow-.

A second mechanic is needed for the following work step.

- Remove the screw -A- and remove the tensioning rail; while doing so, continue to hold the camshaft in place.

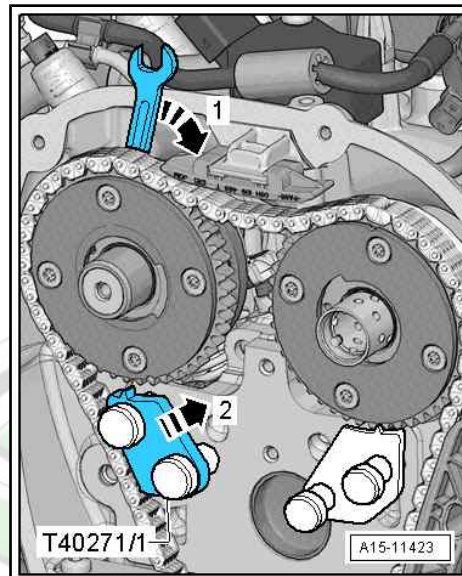




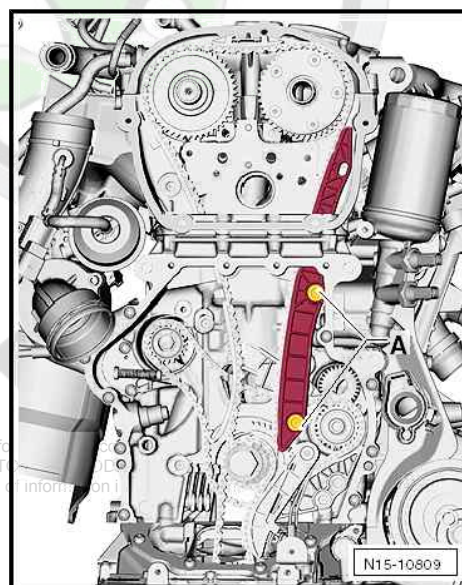
- Insert the camshaft clamp - T40271/1- into the gap in the chain sprocket in direction of arrow -2-.

Turn the exhaust camshaft with the key if necessary -1- until the camshaft clamp - T40271/1- can be pushed in.

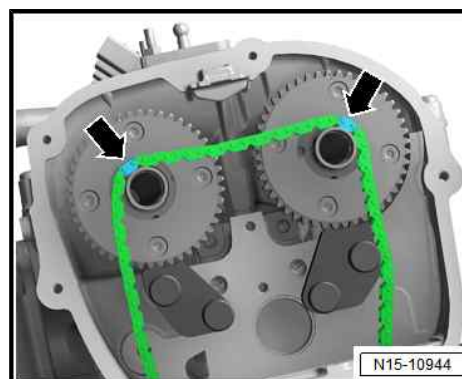
- The camshaft timing shaft must be “loose” between the chain sprockets.



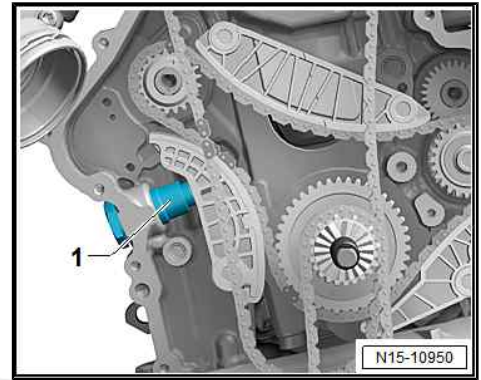
- Unscrew screws -A- and remove the guide rail.
- Remove top sliding rail -10-
⇒ [“3.1 Summary of components - timing chain for camshafts”](#),
[page 112](#) .



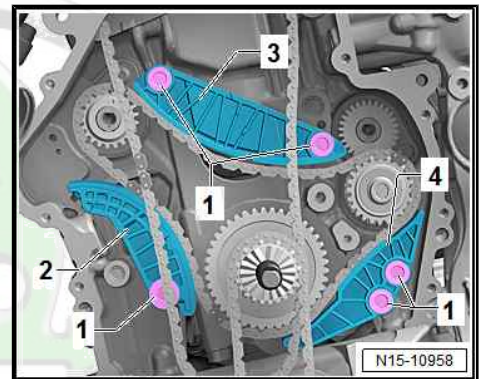
- Remove camshaft timing shaft from the chain sprockets and hook onto the camshaft sprockets -arrows-.



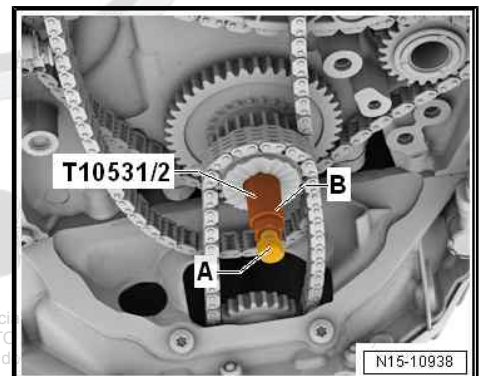
- Remove chain tensioner for balancing shaft timing chain -1-.



- Remove screws-1- and remove tensioning rail -2-, sliding rail -3-, sliding rail -4-.

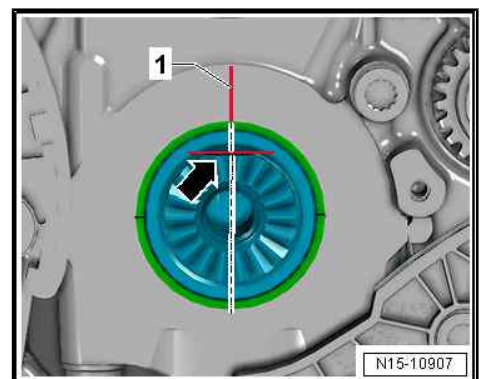


- Detach tensioning rail -A- and unscrew assembly tool -T10531/2- -B-.
- Remove drive chain for oil pump and remove three-stage sprocket.
- Remove camshaft timing shaft and balancing shaft timing chain.



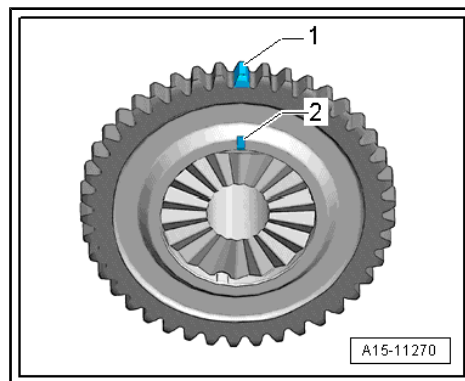
Installing

- Check TDC position of crankshaft.
 - The milled surface -arrow- on the crankshaft must be horizontal.
- Make a marking -1- on the cylinder block with a water-resistant felt tip pen.

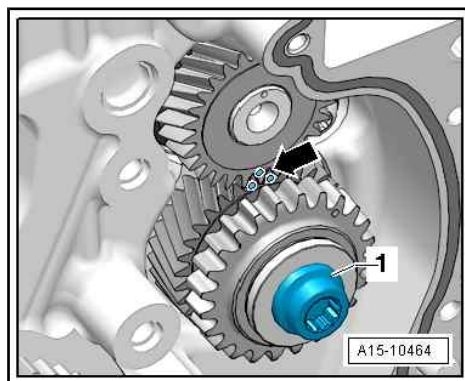




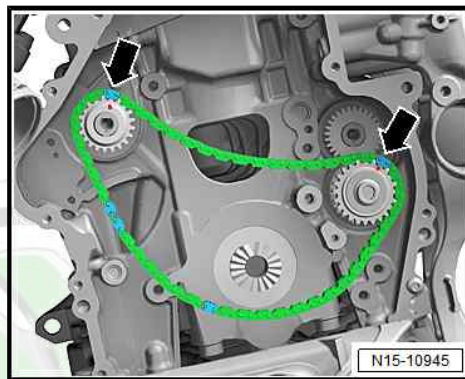
- Mark the tooth -1- of the three-stage chain sprocket at mark -2- with waterproof felt-tip pen.



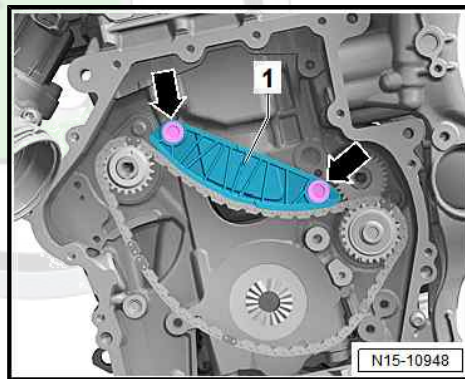
- Turn the intermediate shaft wheel and balancing shaft to the marks -arrow-; do not undo the screw -1-.



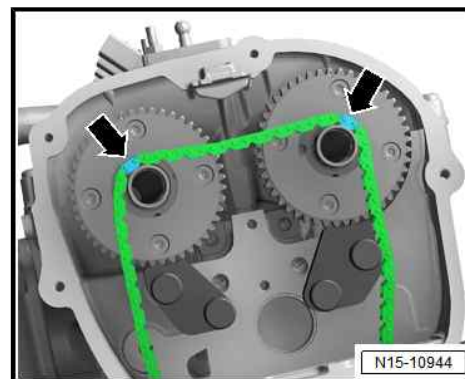
- Place on the balancing shaft timing chain so that the coloured chain links -arrows- are in the marking area on the chain sprockets.



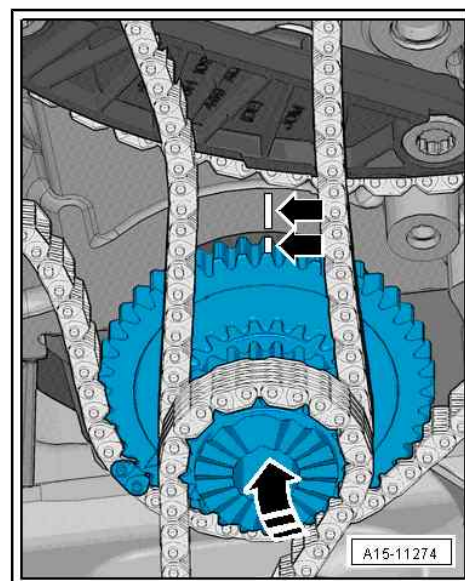
- Install sliding rail -1- and tighten screws -arrows-.



- Attach the camshaft timing shaft with the coloured chain links -arrows- to the camshaft sprocket.



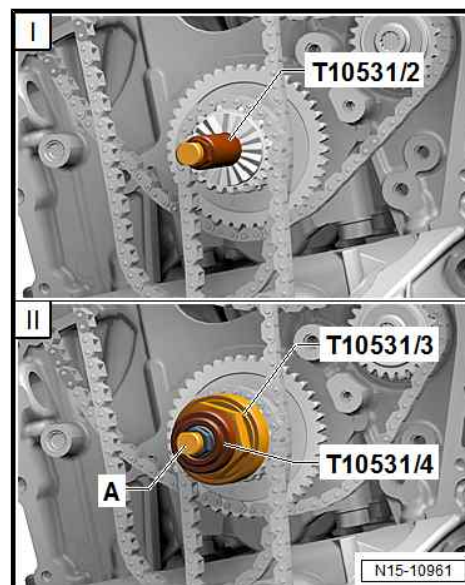
- Place on the final drive chain for the oil pump onto the three-stage sprocket.
- Swivel the three-stage sprocket towards the engine in the direction of -arrow- and push on the crankshaft so that the markings -arrows- face each other.



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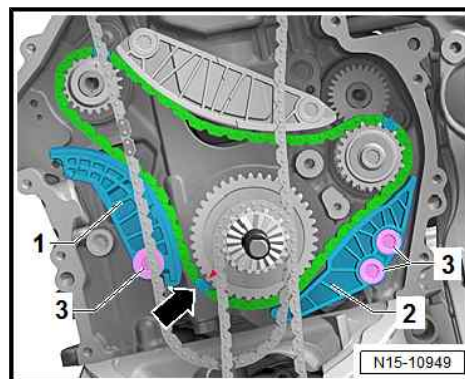
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- I. Insert assembly tool - T10531/2- in the crankshaft and tighten the screw hand-tight.
- II. Slide the assembly tool - T10531/3- onto the assembly tool - T10531/2- - when doing so, pay attention to the tooth contour of the chain sprocket.
- Position the assembly tool - T10531/4- and tighten by hand.
- Use the SW 32 wrench to move it back and forth while holding the assembly tool - T10531/4- in such a way that the sprocket rests firmly against the shoulder of the crankshaft.
- Only now tighten the screw -A-.

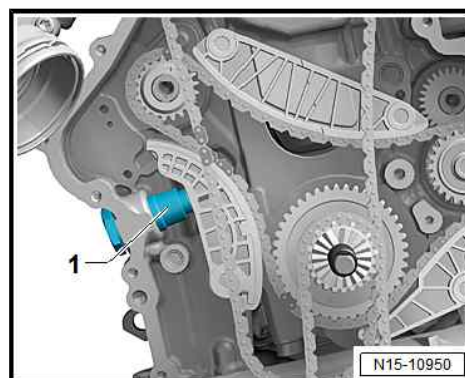




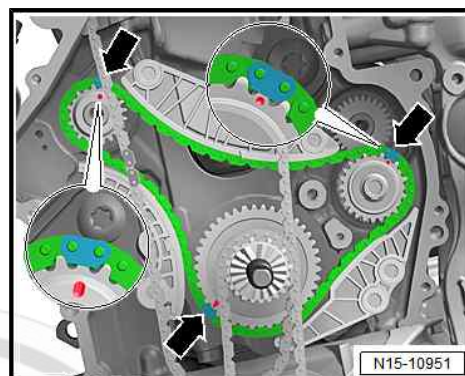
- Position the coloured chain link of the compensating shaft timing chain -arrow- on the marking of the three-stage sprocket position.
- Install the tensioning rail -1-, guide rail -2- and tighten the screws -3-.



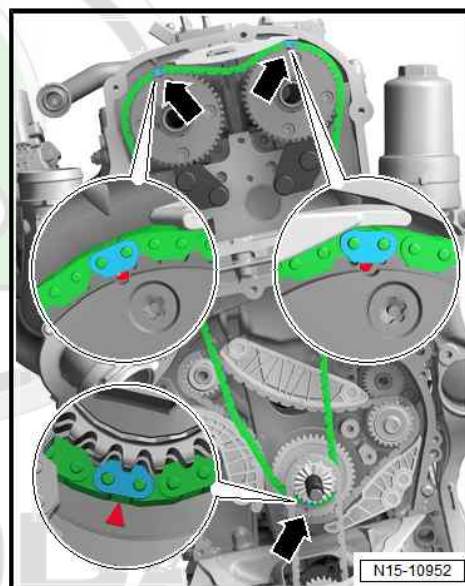
- Install chain tensioner for balancing shaft timing chain -1-.



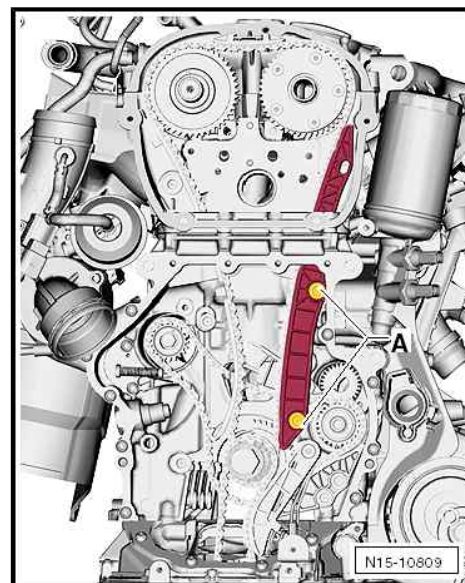
- Check that it is set correctly again.
- The coloured chain links -arrows- must be located at the markings of the chain sprockets.



- Place the camshaft timing chain onto the camshaft sprockets and the on the crankshaft so that the coloured chain links -arrows- are on the markings of the sprockets.



- Install the top guide and tighten the screws -A-.



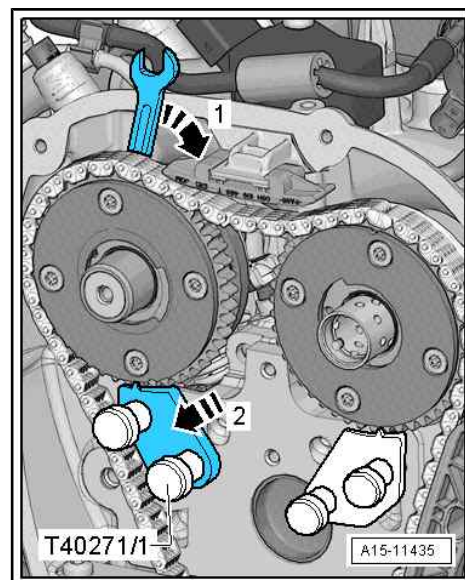
- Rotate the exhaust camshaft slowly in the -direction of arrow 1- until the camshaft clamp - T40271/1- is removed from the teething of the chain sprocket in - direction of arrow 2-.
- Carefully relieve the camshaft until the camshaft timing shaft lies on the top guide rail. Hold the camshaft in place in this position.



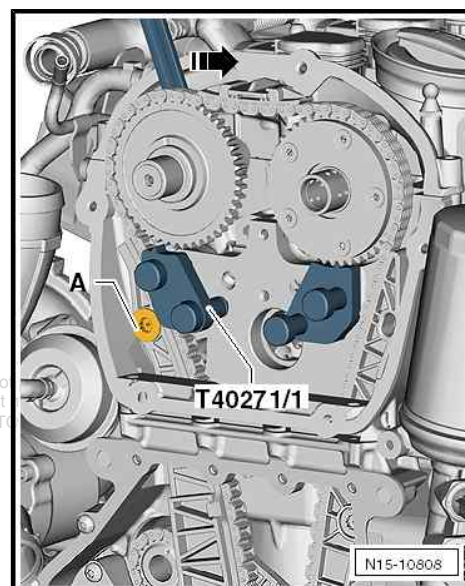
Note

Before installing the tensioning rail, you must check that the coloured chain link still covers the sprocket marking on the camshaft.

A second mechanic is needed for the following work step.



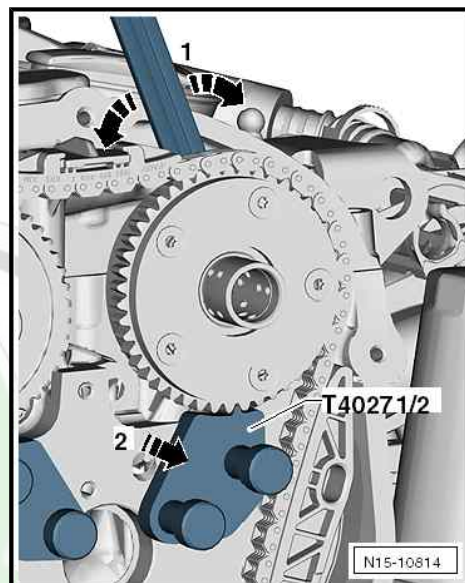
- Install the tensioning rail and tighten the screw -A-.
- Release camshaft.
- Remove the camshaft fixer/locator - T40271/1- .



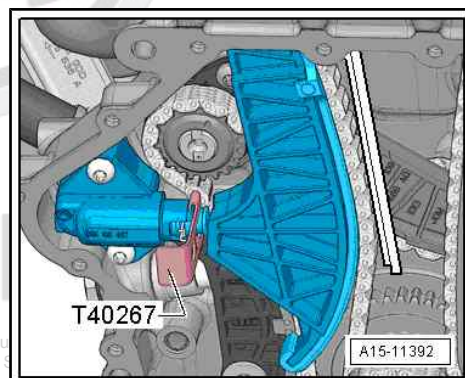
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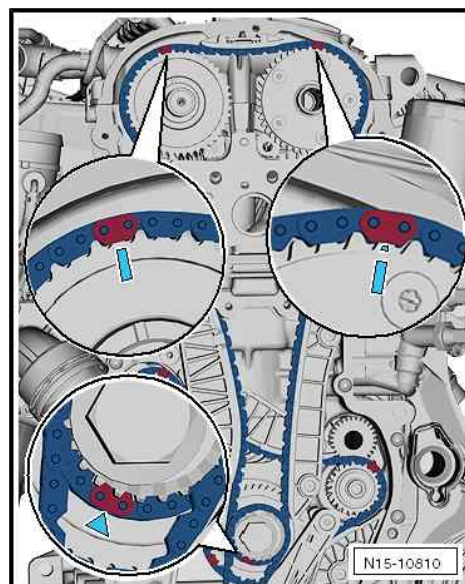
- Remove the camshaft clamp - T40271/2- out of the serration of the chain sprocket in -direction of arrow 2-, where necessary, turn the inlet camshaft in -direction of arrow 1-.
- Release camshaft.
- Remove the camshaft fixer/locator - T40271/2- .



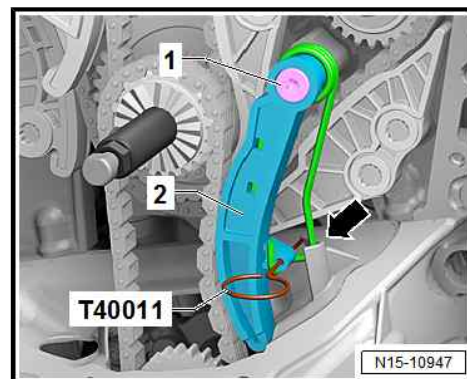
- Depending on the version, remove the rig pin - T40011- or extractor - T40267- .



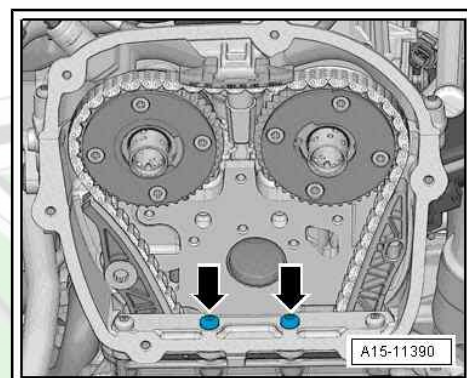
- Check they are set correctly.
- The coloured chain links must be located at the markings of the chain sprockets.



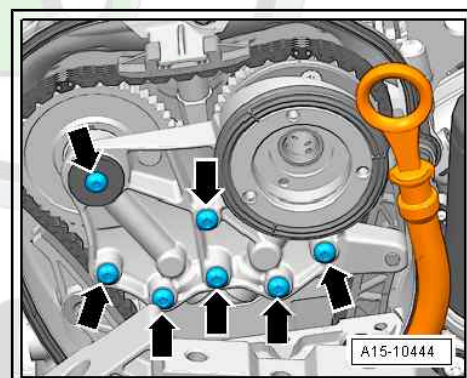
- Install chain tensioner -2-.
- Tighten screw -1- and remove the rig pin - T40011- .



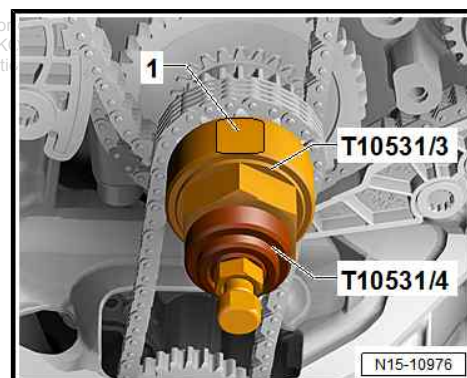
- Screw in and tighten the screws -arrows-.



- Carefully insert the bearing frame without jamming
- Insert screws -arrows- by hand.
- Tighten the screws -arrows- for bearing frame
⇒ ["3.1 Summary of components - timing chain for camshafts", page 112](#) .
- Install control valve (left-hand thread)
⇒ ["3.1 Summary of components - timing chain for camshafts", page 112](#) .



- Insert the assembly tool - T10531/3- .
- The surface of the assembly tool - T10531/3- must be up-
right in the TCD position.
- Tighten the assembly tool - T10531/4- .



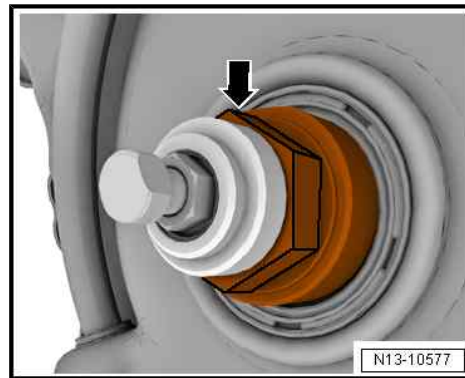


- Turn the engine 2 revolutions in direction of motor rotation on the hexagon, -arrow- and check the timing
⇒ [“3.3 Checking valve timing”, page 126](#) .

Depending on the gear ratio, after the engine has done a full revolution, the coloured chain links no longer match the marks on the chain sprockets. For this reason, check the timing with dial gauge.

The further assembly is carried out in the reverse order, while paying attention to the following:

- Install bottom cover for timing chain
⇒ [“2.3 Removing and installing bottom cover for timing chain”, page 105](#) .
- Install top cover for timing chain
⇒ [“2.2 Removing and installing top cover for timing chain”, page 104](#) .



Tightening torques - summaries of components



Note

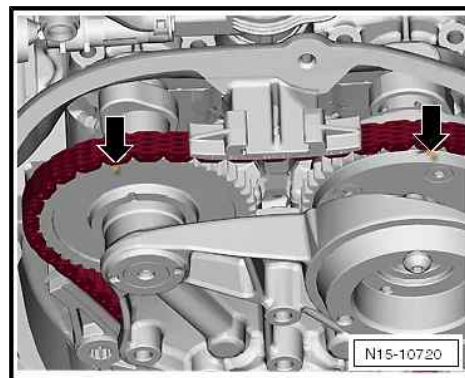
Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ♦ Summary of components - timing chain for camshafts
⇒ [“3.1 Summary of components - timing chain for camshafts”, page 112](#) .
- ♦ Summary of components - cylinder head
⇒ [“1.1 Summary of components - cylinder head”, page 73](#) .
- ♦ Chain tensioner for the oil pump
⇒ [“1.1 Assembly overview - pan/oil pump”, page 156](#) .
- ♦ Summary of components compensating shaft timing chain
⇒ [“4.1 Summary of components - balancing shaft timing chain and balancing shafts”, page 58](#) .

3.3 Checking valve timing

Special tools and workshop equipment required

- ♦ Adapter for dial gauge - T10170- or -T10170A-
- ♦ Dial gauge
- ♦ Calliper gauge
- Remove top cover for timing chain
⇒ [“2.2 Removing and installing top cover for timing chain”, page 104](#) .
- Rotate V-ribbed belt pulley crankshaft with the counterholder - T10355- in direction of arrow until the marks -arrows- are almost on top.
- Remove spark plug for cylinder 1.



- Screw in the adapter for dial gauge - T10170- or -T10170A- into the plug connector thread up to the stop.
- Insert the dial gauge with extension piece - T10170A/1- as far as it goes and clamp firmly with the clamping screw -arrow-.
- Slowly turn the crankshaft in the running direction of the engine as far as the maximum pointer swing.

Once the maximum pointer swing is reached (reversal point), the piston is at "ODT".

If the piston is turned beyond the "ODT", turn the crankshaft a further 2 turns in the running direction of the engine. Do not rotate the engine against its running direction.

- Measure the distance from the left outer edge of the ledge -A- to the marking -B- on the inlet camshaft sprocket.

- Target value: 61 - 64 mm

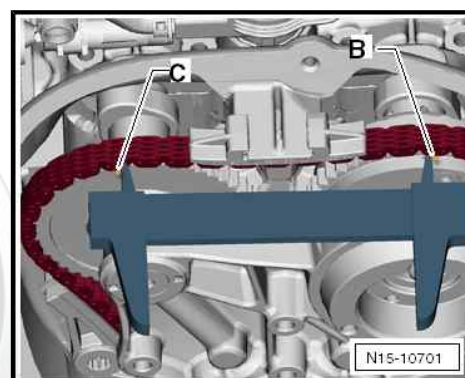
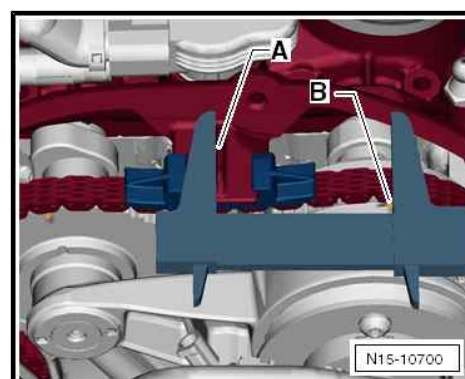
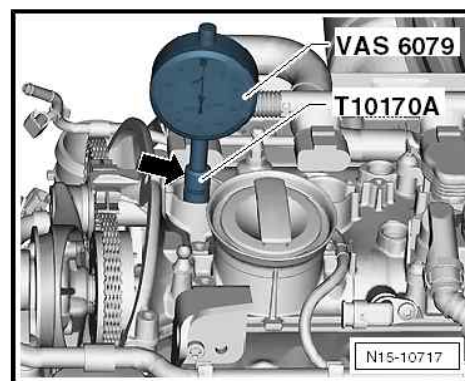
If the specified value is reached:

- Measuring the distance between marking -B- on the intake camshaft sprocket and marking -C- on the exhaust camshaft sprocket.

- Target value: 124 - 126 mm

The offset of a tooth means a deviation of around 6 mm from the setpoint value.

If an offset is found, the timing chain will need to be remounted.



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4 Valve gear

⇒ [“4.1 Assembly overview - valve gear”, page 128](#)

⇒ [“4.2 Removing and installing camshafts”, page 130](#)

⇒ [“4.3 Removing and installing camshaft control valve 1 N205 ”, page 147](#)

⇒ [“4.4 Removing and installing valve stem seal”, page 147](#)

⇒ [“4.5 inspecting valve guides”, page 155](#)

4.1 Assembly overview - valve gear



Note

- ◆ *Cylinder head and cylinder head cover may only be replaced together.*
- ◆ *After installing the camshafts, the engine must not be started for about 30 minutes. The hydraulic clearance compensation elements must settle (otherwise valves would strike the pistons).*
- ◆ *After carrying out work on the valve gear, carefully crank engine at least 2 revolutions to ensure that no valve touches the piston when the engine is started.*
- ◆ *Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.*
- ◆ *Always replace seals and gasket rings.*

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1 - Exhaust valve

- ☐ do not rework, only grinding in is permissible
- ☐ Valve dimensions
⇒ [Fig. "Valve dimensions", page 130](#)
- ☐ inspecting valve guides
⇒ ["4.5 inspecting valve guides", page 155](#)

2 - Cylinder head

3 - Valve guide

- ☐ Check
⇒ ["4.5 inspecting valve guides", page 155](#)

4 - Valve stem gasket

5 - Valve spring

6 - Valve spring plate

7 - Valve collets

8 - Hydraulic supporting element

- ☐ Do not interchange
- ☐ oil contact surfaces

9 - Exhaust camshaft

- ☐ Removing and installing
⇒ ["4.2 Removing and installing camshafts", page 130](#)
- ☐ Knock: no more than 0.04 mm

10 - Cylinder head cover

- ☐ with integrated camshaft bearing, several versions ⇒ ETKA - Electronic Catalogue of Original Parts
- ☐ Version without service openings from 11.2013
- ☐ Removing and installing ⇒ ["4.2 Removing and installing camshafts", page 130](#)
- ☐ Clean the sealing surfaces, reworking is not permissible
- ☐ remove old sealant residues

11 - Screws

- ☐ Replace after disassembly
- ☐ Tightening torque and tightening order
⇒ [Fig. "Cylinder head cover - tightening sequence", page 130](#)

12 - O-ring

- ☐ replace
- ☐ moisten with engine oil

13 - Plug

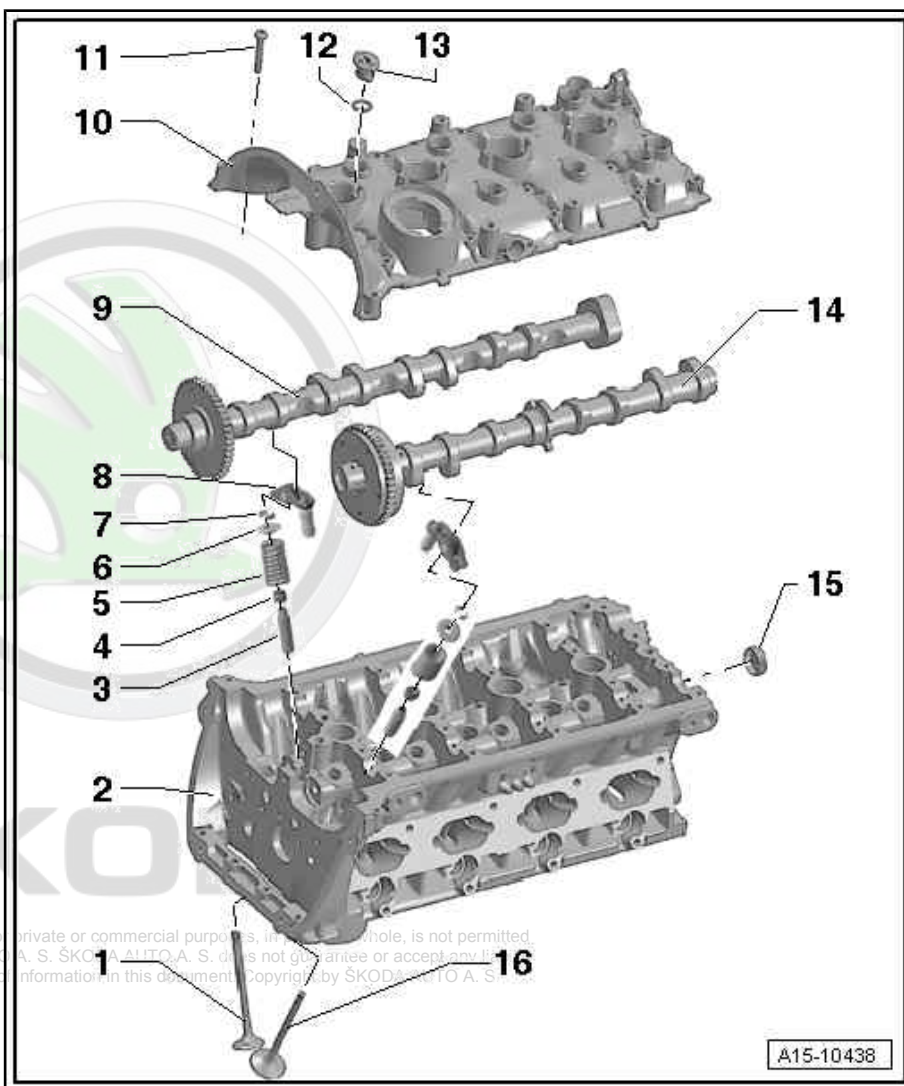
- ☐ replace

14 - Inlet camshaft

- ☐ Removing and installing ⇒ ["4.2 Removing and installing camshafts", page 130](#)
- ☐ Knock: no more than 0.04 mm

15 - Screw cap

- ☐ replace
- ☐ installing: Plunge into the middle of the cover using a screwdriver and lever out.





- ❑ installing: Use no sealant, press in with pressure plate - T10174- 1...2 mm deep.

16 - Inlet valve

- ❑ do not rework, only grinding in is permissible
- ❑ Valve dimensions ➔ [Fig. "Valve dimensions", page 130](#)
- ❑ inspecting valve guides ➔ ["4.5 inspecting valve guides", page 155](#)

Cylinder head cover - tightening sequence

- Replace bolts after removal.

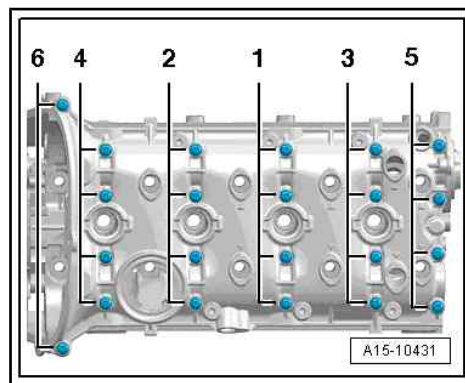


Note

Make sure that the cylinder head cover is not tilted.

- Tighten all bearing cap bolts fully in the given sequence:

Level	Screws	Tightening torque
1	-1- to -6-	Tighten by hand as far as the stop
2	-1- to -6-	8 Nm
3	-1- to -6-	Turn 90° further



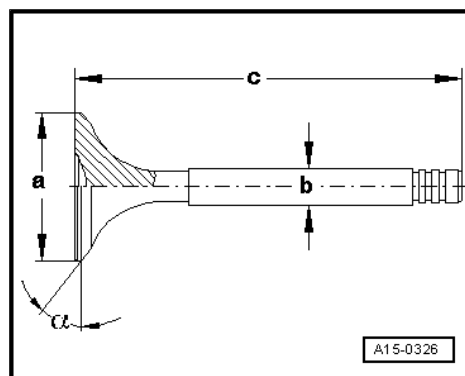
Valve dimensions



Note

Inlet and exhaust valves must not be reworked. Only grinding in with grinding paste is permissible.

Dimension	Inlet valve	Exhaust valve	
Engines	1.8 l; 2.0 l	1.8 l	2.0 ltr.
Ø a	mm	33.85 + 0.10	28.0 + 0.1
Ø b	mm	5.98 + 0.007	5.965 + 0.007
c	mm	103.97	101.87
α	°	45	45



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4.2 Removing and installing camshafts

Special tools and workshop equipment required

- ◆ Thrust piece - T10174-
- ◆ Assembly tool - T10352- , depending on version:
- ◆ -T10352/1-
- ◆ -T10352/1A-
- ◆ -T10352/2-
- ◆ -T10352/3-
- ◆ -T10352/4-
- ◆ Counterholder - T10355-
- ◆ Rig pin - T40011-

- ◆ Counterholder - T40267-
- ◆ camshaft clamp - T40271-
- ◆ Lever - T40243-
- ◆ Protective goggles
- ◆ Protective gloves
- ◆ Silicone sealant ⇒ ETKA - Electronic catalogue of original parts
- ◆ Cleaning and degreasing agent , e.g. -D 009 401 04-
- ◆ Sealant remover Gasket Stripper (stock code GST, stock item No. R 34402), manufacturer Retech s.r.o.



Note

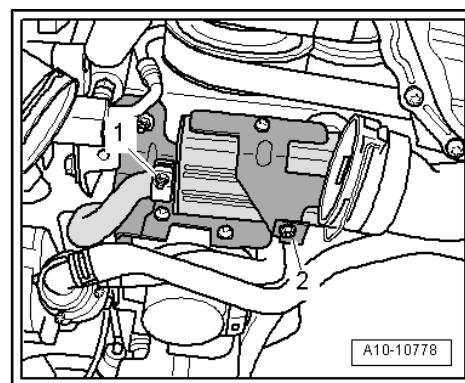
- ◆ *The sealing surfaces of the lower cylinder head cover and the top cylinder head must not be machined.*
- ◆ *The camshaft bearings are integrated in the cylinder head/ cylinder head cover. The camshaft timing chain must be slackened before removing the cylinder head cover.*
- ◆ *If the cylinder head cover was loosened, the screw cap must be replaced between the cylinder head cover and the cylinder head.*

Removing

- Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .
- Remove the front right wheelhouse liner ⇒ Body Work; Rep. gr. 66 .

Vehicles with auxiliary heating

- Unscrew clamp -1- and remove screw -2-.
- Remove the muffler for the auxiliary heating.



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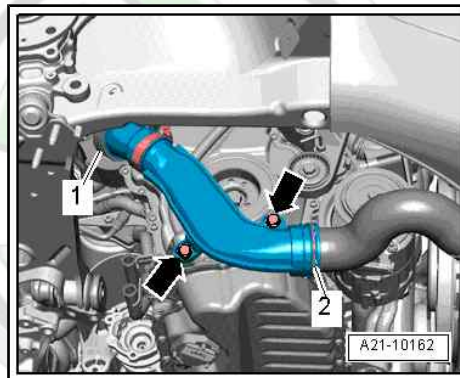
Continued for all vehicles

- Remove screws -arrows-.
- Remove charge-air pipe. To do so, remove the terminals -1-, -2-.
- Remove top cover for timing chain
⇒ ["2.2 Removing and installing top cover for timing chain", page 104](#) .
- Remove vacuum pump
⇒ ["1.5 Removing and installing the vacuum pump", page 100](#) .



NOTICE

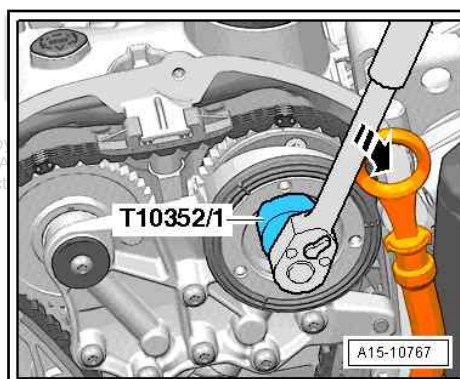
The control valve has a left-hand thread.



- Remove control valve in -arrow- with assembly tool remove, depending on the version:

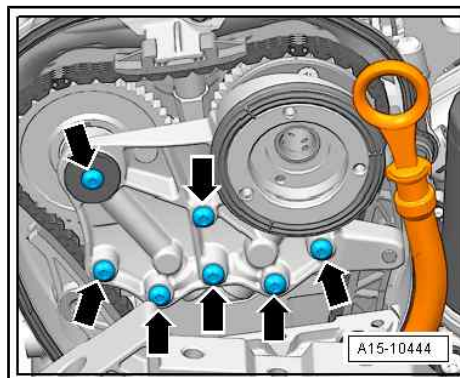
- ◆ -T10352/1-
- ◆ -T10352/1A-
- ◆ -T10352/2-
- ◆ -T10352/3-
- ◆ -T10352/4-

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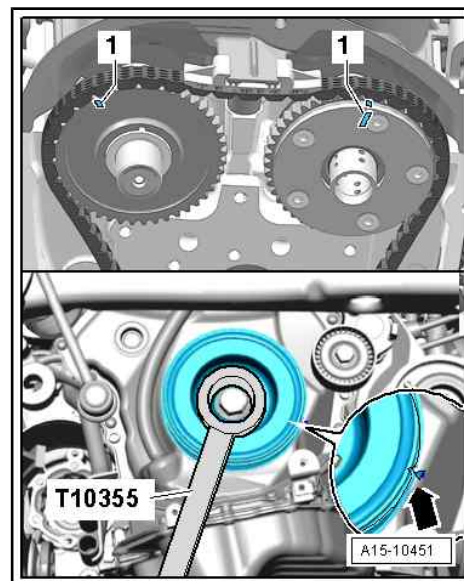


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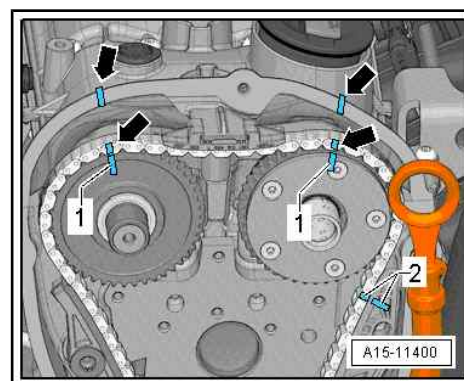
- Unscrew screws -arrows- and remove the bearing frame.



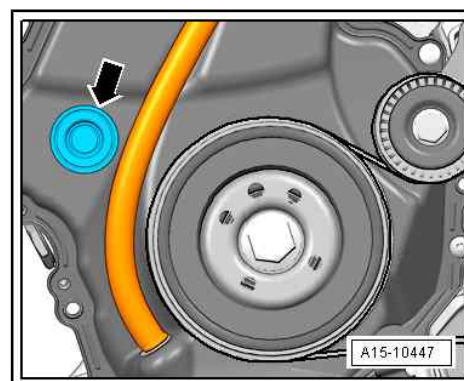
- Turn the V-ribbed belt pulley, crankshaft with the counterholder - T10355- in position “ODT for cylinder 1” -arrow-.
- The markings -1- on the camshaft chain sprockets must point upwards.
- The notch on the crankshaft V-ribbed belt pulley -arrow- and the marking on the cover for the bottom cover for timing chain must face each other.



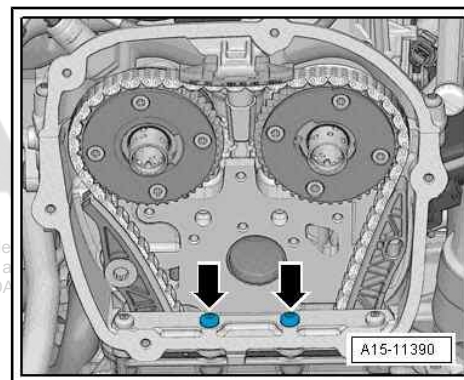
- The mutual position of the camshaft timing shaft/cylinder head cover -arrows- for the markings on the chain sprockets -1- with a waterproof felt-tip pen.
- Mark the mutual position of camshaft timing chain/guide rail -2- with a water-resistant felt tip pen.



- Remove the screw plug -arrow-.



- Remove screws -arrows-.



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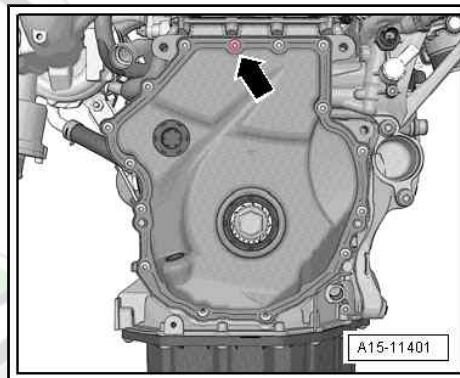


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Octavia II 2004 ➤ , Octavia II 2010 ➤ , Superb II 2008 ➤ , Superb II 20 ...
1.8/112; 118 kW; 2.0/147 kW TSI engine - Edition 06.2019

- Unscrew screw -arrow-.

Depending on the version, two different chain tensioners can be fitted



Version 1

- Screw in lever - T40243- -arrows-.



Note

If the lever - T40243- cannot be inserted, the lower cover for the timing chain must be removed
⇒ ["2.3 Removing and installing bottom cover for timing chain"](#), page 105.

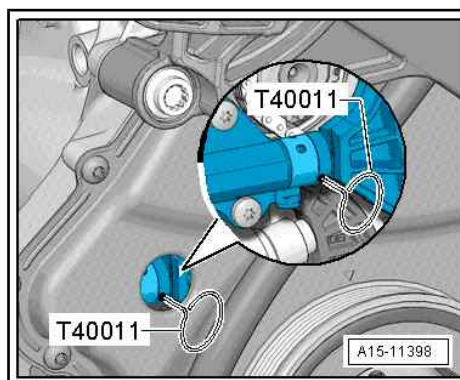
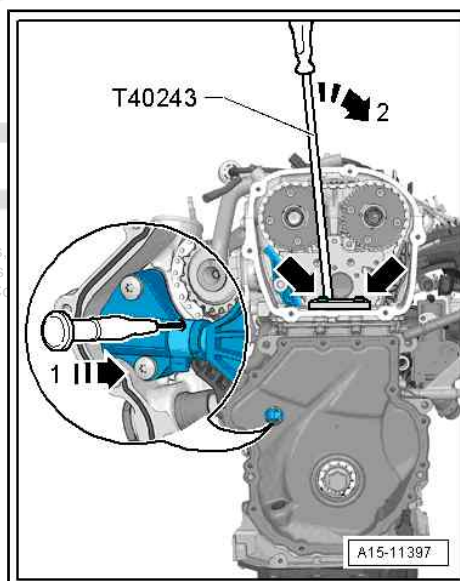
- Using a suitable cross-head screwdriver (approx. 1.5 mm) or with a needle, raise the locking device of the chain tensioner in direction of arrow -1-.



NOTICE

- ♦ **Risk of damage to the chain tensioner! Proceed very carefully.**

- Slowly press the tensioning rail with the lever - T40243- in -direction of arrow 2-.
- Secure the chain tensioner using the extractor - T40011- .



Version 2

- Screw on the mounting lever - T40243- -arrows-.

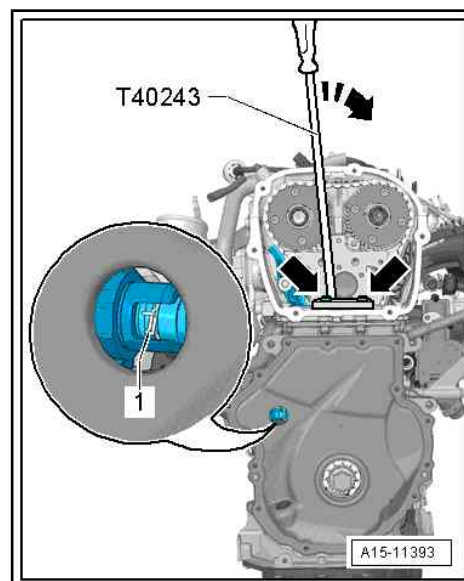


Note

If the lever - T40243- cannot be inserted, the lower cover for the timing chain must be removed

⇒ "2.3 Removing and installing bottom cover for timing chain", page 105.

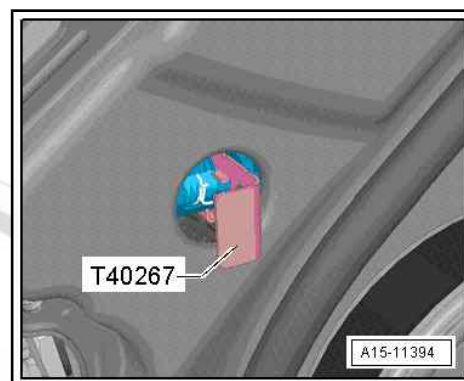
- Press compress circlip -1- of the chain tensioner together, and hold in place.
- Slowly press the tensioning rail with the lever - T40243- in -direction of arrow-.



- Secure the chain tensioner using the extractor - T40267- .

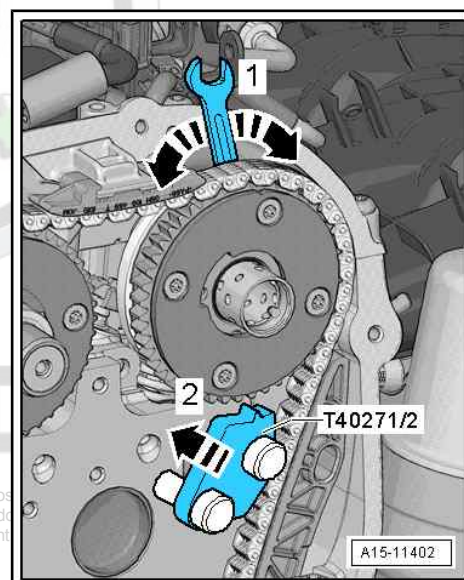
Continued for all vehicles

- Remove lever - T40243- .



- Screw the camshaft clamp - T40271/2- onto the cylinder head and into the gap of the sprocket in the direction of the arrow -2-.

Turn the intake camshaft with the key if necessary -1- until the camshaft clamp - T40271/2- can be pushed in.



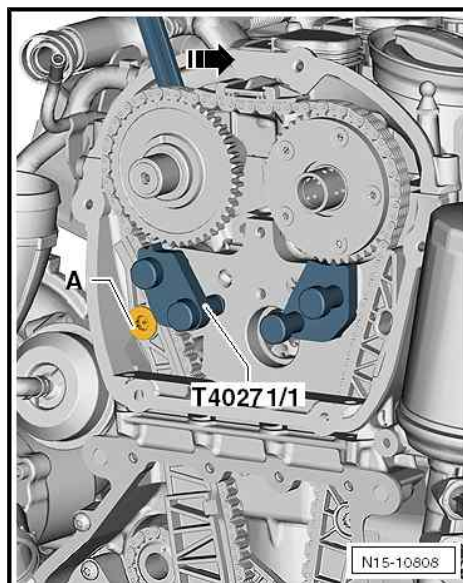
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- Screw the camshaft clamp - T40271/1- onto the cylinder head.
- Hold the exhaust camshaft in place with an open-end wrench clockwise -arrow-.

A second mechanic is needed for the following work step.

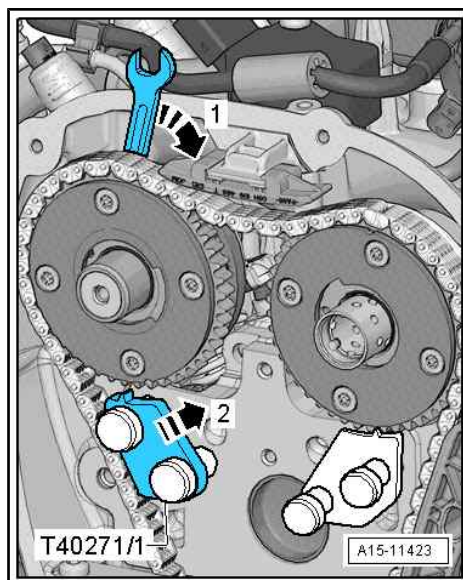
- Remove the screw -A- and remove the tensioning rail; while doing so, continue to hold the camshaft in place.



- Insert the camshaft clamp - T40271/1- into the gap in the chain sprocket in direction of arrow -2-.

Turn the exhaust camshaft with the key if necessary -1- until the camshaft clamp - T40271/1- can be pushed in.

- The camshaft timing shaft must be “loose” between the chain sprockets.



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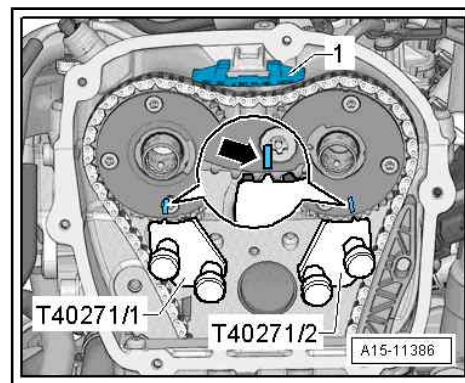
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- Using a waterproof felt-tip pen, mark the chain sprockets around the pegs of the camshaft clamps - T40271/1- and - T40271/2- -arrow-.
- Release latches with a screwdriver and remove guide rail -1- forwards.
- Remove the camshaft timing shaft from the chain sprockets.
- Turn crankshaft counterclockwise out of TDC position while holding the timing chain that has been tightened by hand as you do so.



Note

When the bottom cover for the timing chain is assembled, the loose chain "can" "not" jump the crankshaft sprocket.



NOTICE

Risk of damaging the valve gear and the bottom cover for timing chain!

- ◆ When the camshaft timing shaft was removed from the chain sprockets, the crankshaft must not be turned further.
- ◆ Plates are attached to the bottom cover for timing chain which prevents the chain from slipping. When the crankshaft is rotated when the chain is more loose, the plates may bend.
- ◆ When turning the crankshaft, the timing chain must be kept tight by hand.

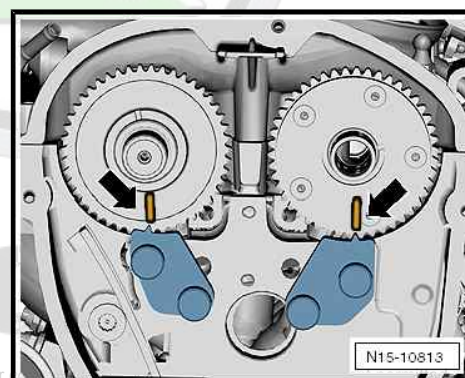
When replacing the camshafts, the markings attached earlier must be transferred. The following work steps are necessary:

- Mark the position of the chain sprockets -arrows- for the locking devices with a waterproof felt-tip pin.

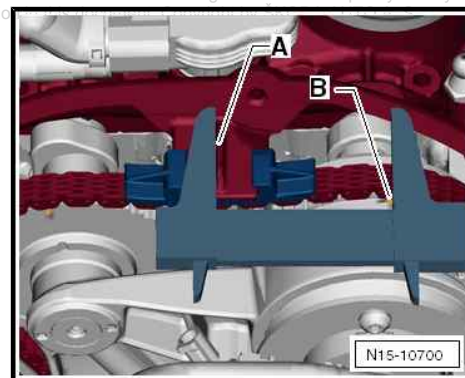


Note

The following measurement of the clearances will be used later in the inspection whether the markings are transferred correctly.

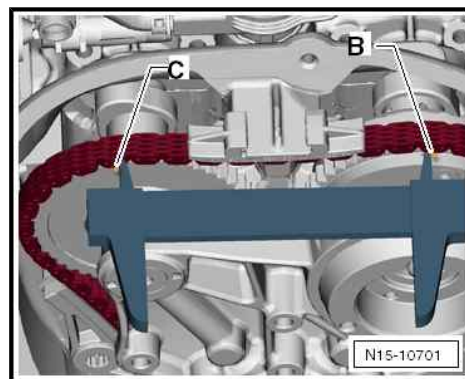


- Measure the distance from the left outer edge of the ledge -A- to the marking -B- on the inlet camshaft sprocket, and note down the value.

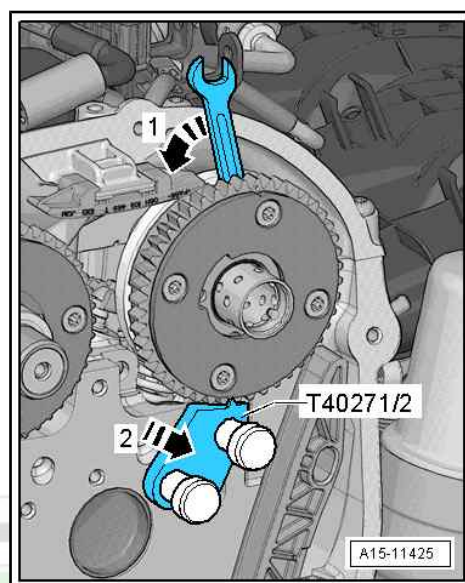




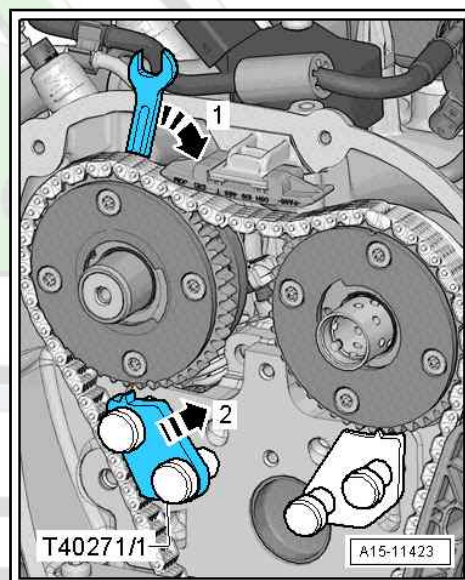
- Measure the clearance between the marking -B- on the sprocket and marking -C- on the exhaust camshaft sprocket and note down the value.



- Rotate the inlet camshaft slowly in -direction of arrow 1- until the camshaft clamp - T40271/2- can be removed from the serration of the chain sprocket.
- Put the camshaft in the rest position.

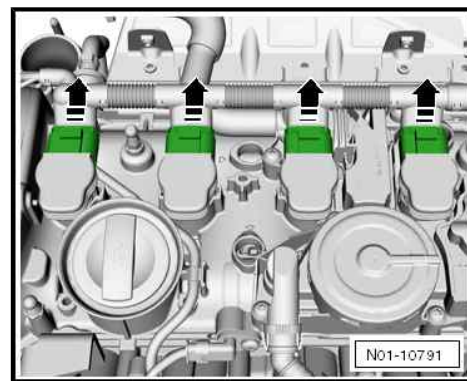


- Rotate the exhaust camshaft slowly in the -direction of arrow 1- until the camshaft clamp - T40271/1- is removed from the teething of the chain sprocket in - direction of arrow 2-.
- Put the camshaft in the rest position.

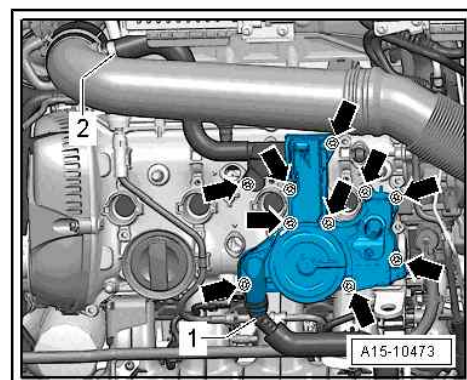


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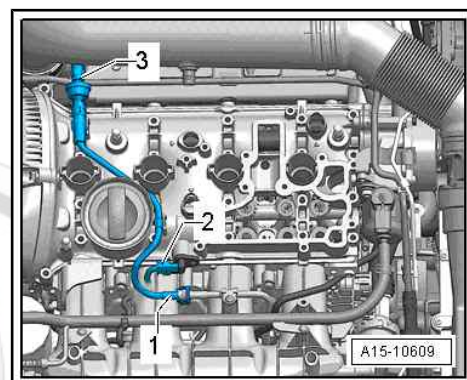
- Remove the connector from the ignition coils and place the wiring harness to one side.
- Remove ignition coils with extractor - T40039-
⇒ ["1.2 Removing and installing ignition coils with output stage"](#),
[page 342](#) .



- Disconnect the hoses for the crankcase ventilation -1- and -2-.
- Unscrew screws -arrows- and remove the crankcase ventilation.



- Disconnect the vacuum line -1- and expose.
- Disconnect plugs -2- from hall sender - G40- .



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Octavia II 2004 ➤ , Octavia II 2010 ➤ , Superb II 2008 ➤ , Superb II 20 ...
1.8/112; 118 kW; 2.0/147 kW TSI engine - Edition 06.2019

- Unscrew screws for camshaft housing in the sequence -1- to -6-.
- Remove cylinder head cover.
- Carefully lift out camshafts and place down on a clean surface.

⚠ CAUTION

Wear protective gloves when working with sealant and grease remover!

- Using the chemical sealant remover, remove the old sealant from the grooves on the cylinder head cover and all sealing surfaces of the cylinder head cover and cylinder head.

Ensure that no dirt and sealant residues get into the cylinder head.

- Degrease the sealing surfaces.

Installing

- The pistons must not be positioned at top dead centre.



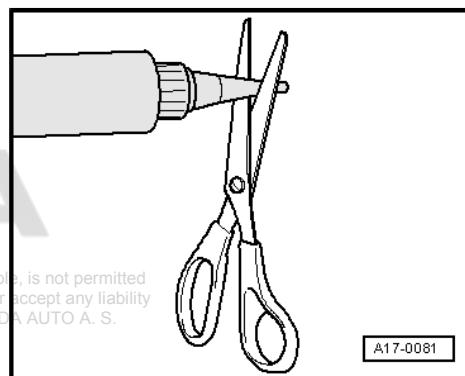
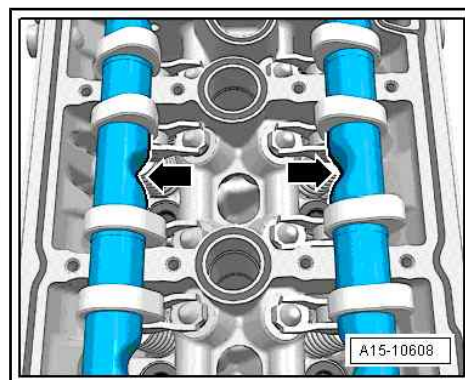
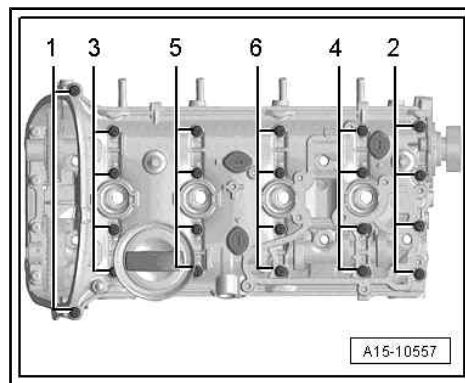
Note

- ♦ *The sealing surfaces must be free of oil and grease.*
- ♦ *Make sure that all roller rocker arms correctly rest on the end of the valve stem.*

On new camshafts, transfer the markings attached to the removed camshafts.

- Oil contact surfaces of camshafts.
- Carefully insert the camshafts into the camshaft bearings of the cylinder head.
- The recesses -arrows- must be perpendicular to each other.
- Replace screws for cylinder head cover.

- Cut off nozzle tube at the front marking (Ø of nozzle approx. 2 mm).



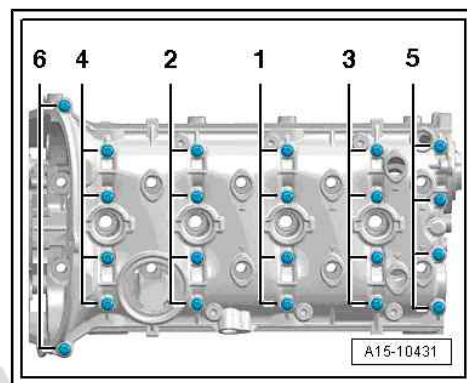
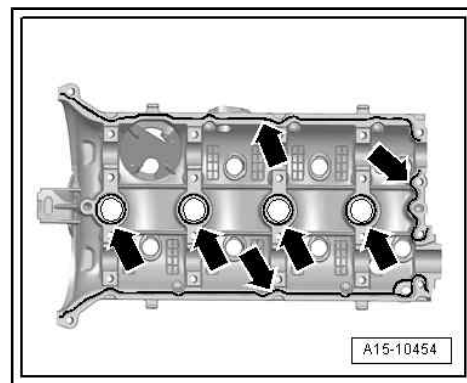
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- Apply silicone sealant to the clean sealing surface of the cylinder head cover, as shown in the illustration -arrows-.
- ◆ Thickness of sealant bead: 2-3 mm.



Note

- ◆ Pay attention to the use by date on sealant.
- ◆ The sealant bead must not be thicker than specified otherwise excess sealant may get into the oil sump and clog the strainer in the oil suction pipe.
- ◆ The positioning and fitting of the cylinder head cover should take place without interruption as the sealant begins to harden straight away as soon as the sealing flanges come into contact.
- Place on the cylinder head cover without tilting it.
- Tighten the screws in several stages
⇒ Fig. "Cylinder head cover - tightening sequence", page 130 .



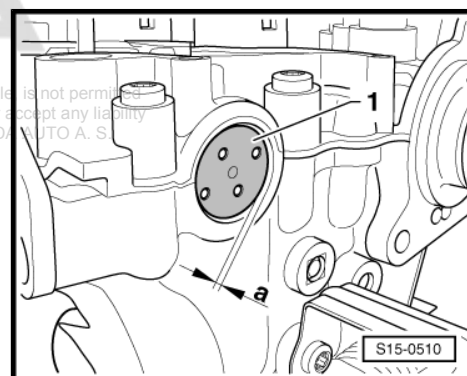
- Drive in the screw cap -1- with thrust piece - T10174- .
-a-: 1 ... 2 mm.



NOTICE

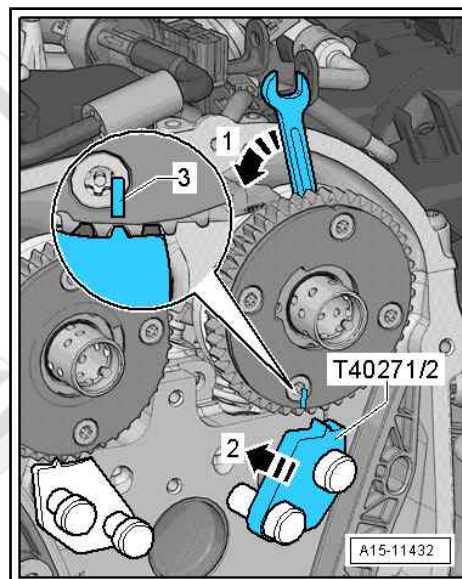
Risk of damaging the valve gear and the bottom cover for timing chain!

- ◆ Plates are attached to the bottom cover for timing chain which prevents the chain from slipping. When the crankshaft is rotated when the chain is more loose, the plates may bend.
- ◆ When turning the crankshaft, the timing chain must be kept tight by hand.



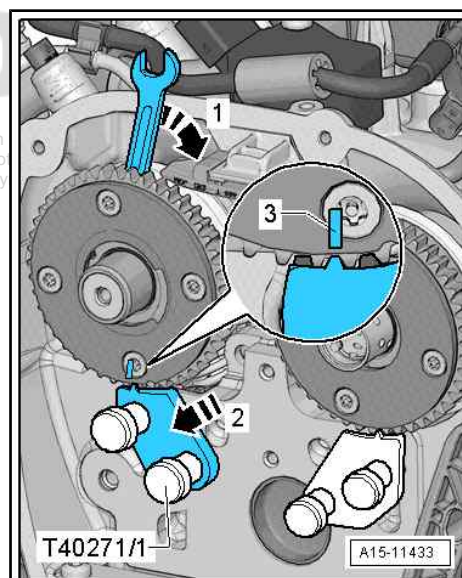


- Turn the inlet camshaft in -direction of arrow 1- until the marking -3- is congruent with the camshaft clamp - T40271/2- .
- Insert the camshaft clamp - T40271/2- into the gap in the chain sprocket in direction of arrow -2-.



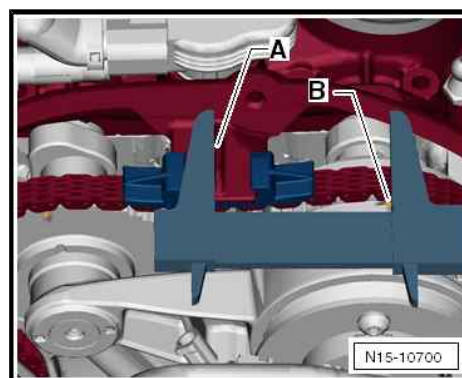
- Turn the exhaust camshaft in -direction of arrow 1- until the marking -3- is congruent with the camshaft clamp - T40271/1- .
- Insert the camshaft clamp - T40271/1- into the gap in the chain sprocket in direction of arrow -2-.

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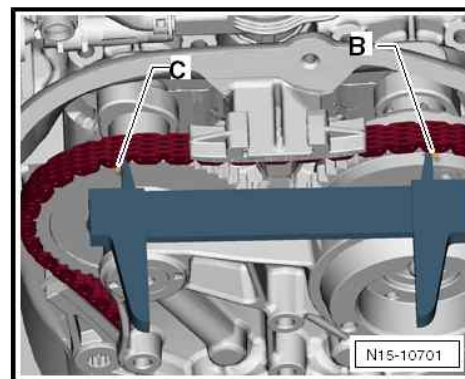


With the new camshafts

- Compare the distance from the left outer edge of the ledge -A- to the marking -B- on the inlet camshaft sprocket with the value noted down.

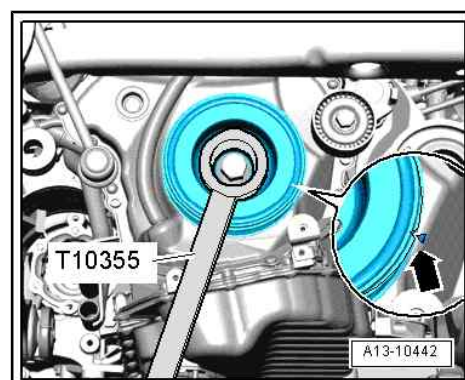


- Compare the clearance between the marking -B- on the inlet camshaft sprocket and marking -C- on the exhaust camshaft sprocket with the value previously noted down.



Continued for all versions

- Turn the V-ribbed belt pulley, crankshaft with the counterholder - T10355- in position "ODT for cylinder 1" -arrow-.
- The notch on the V-ribbed belt pulley must face the arrow marking on the bottom cover for the timing chain.

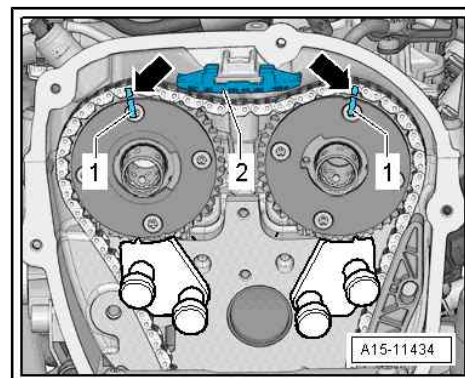


- Place the camshaft timing chain on the camshaft sprockets so that the markings on the chain -arrows- are on the sprocket markings -1-.
- Install sliding rail -2-.



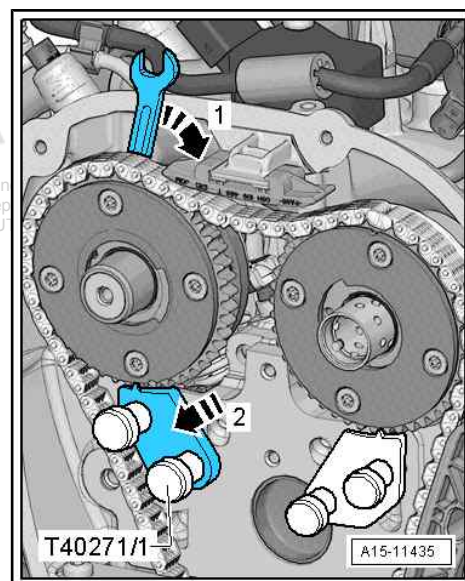
Note

A second mechanic is required for installing the exhaust camshaft.



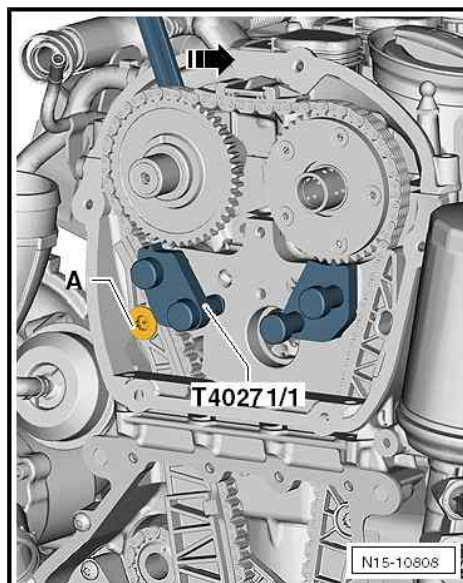
- Rotate the exhaust camshaft slowly in the -direction of arrow 1- until the camshaft clamp - T40271/1- is removed from the teeth of the chain sprocket in - direction of arrow 2-.
- Carefully relieve the camshaft until the camshaft timing shaft lies on the top guide rail. Hold the camshaft in place in this position.

A second mechanic is needed for the following work step.

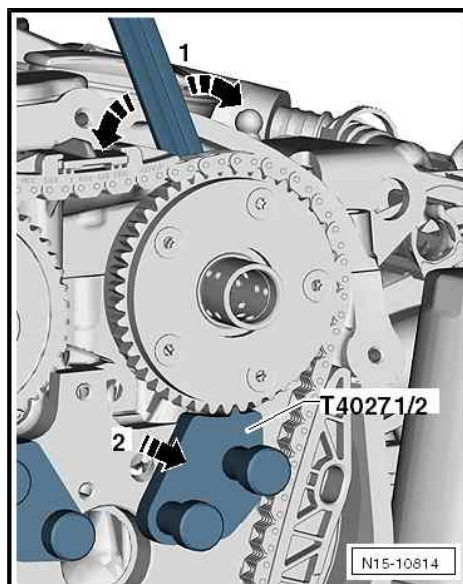




- Install the tensioning rail and tighten the screw -A-.
- Remove the camshaft fixer/locator - T40271/1- .



- Remove the camshaft clamp - T40271/2- out of the serration of the chain sprocket in -direction of arrow 2-, where necessary, turn the inlet camshaft in -direction of arrow 1-.
- Release camshaft.
- Remove the camshaft fixer/locator - T40271/2- .

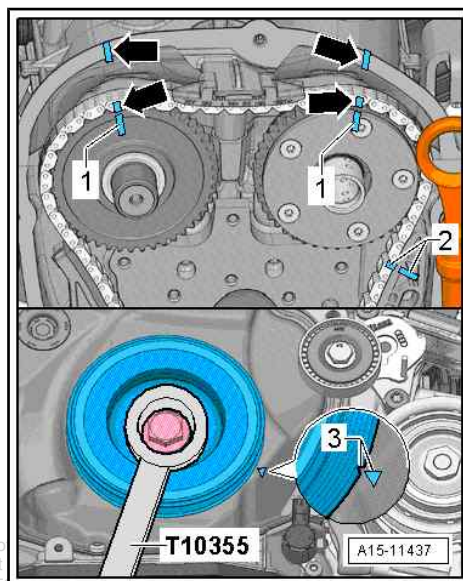


- Check the marks at the camshaft timing chain and cylinder head cover -arrows-, it must coincide with the marks at the chain wheels -1-.
- The markings -2- on the camshaft timing chain and slide rail must match.
- The notch on the V-ribbed belt pulley must face the arrow marking -3- on the bottom cover for the timing chain.



Note

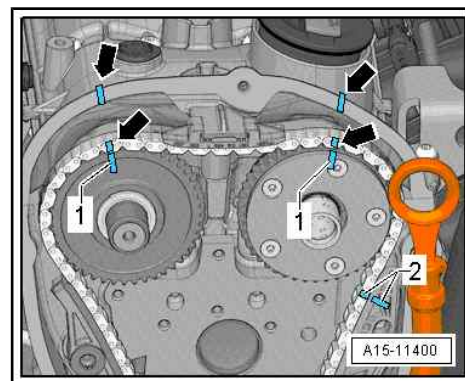
If the attached markings are no longer visible, check the timing
⇒ [“3.3 Checking valve timing”, page 126](#) .



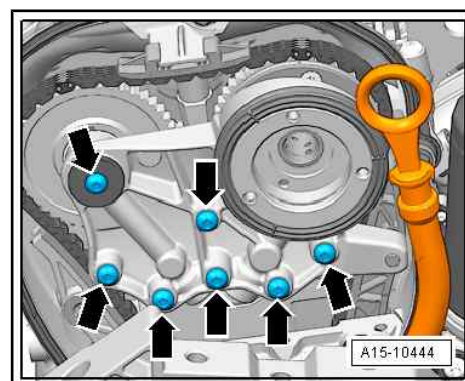
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When the markings on the timing chain and slide rail -2- do not match even though the engine is on "OT for cyl. 1" the drive chain is bypassed on the sprocket of the crankshaft.

- Replace camshaft timing chain
⇒ ["3.2 Removing and installing the camshaft timing chain", page 113](#) .



- Carefully insert the bearing frame without jamming
- Insert screws -arrows- by hand.
- Tighten the screws -arrows- for bearing frame
⇒ ["3.1 Summary of components - timing chain for camshafts", page 112](#) .

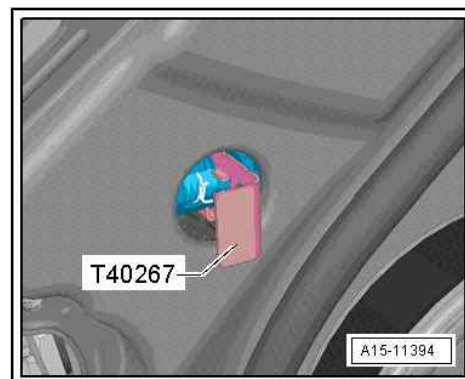


- Depending on the version, remove the rig pin - T40011- or extractor - T40267- .

! NOTICE

Risk of damaging valves and piston crowns after work on the valve gear.

To ensure that no valve is set when starting the engine, turn the crankshaft carefully by at least 2 turns.



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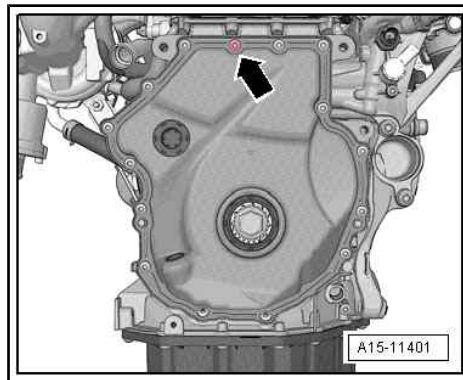
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- Unscrew bolt -arrow-.
- Install control valve (left-hand thread)
⇒ [“3.1 Summary of components - timing chain for camshafts”](#),
[page 112](#) .

Further installation occurs in reverse order. However, pay attention to the following:

- Observe the tightening sequence of the crankcase ventilation
⇒ [Fig. “Crankcase ventilation - tightening sequence”](#),
[page 75](#) .
- Install top cover for timing chain
⇒ [“2.2 Removing and installing top cover for timing chain”](#),
[page 104](#) .
- Install vacuum pump
⇒ [“1.5 Removing and installing the vacuum pump”](#),
[page 100](#) .



Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Cylinder head cover
⇒ [“4.1 Assembly overview - valve gear”](#), [page 128](#) .
- ◆ Charge air pipe
⇒ [“2.1 Summary of components - charge air cooler”](#),
[page 274](#) .
- ◆ Summary of components - timing chain for camshafts
⇒ [“3.1 Summary of components - timing chain for camshafts”](#),
[page 112](#) .
- ◆ Summary of components - cylinder head
⇒ [“1.1 Summary of components - cylinder head”](#), [page 73](#) .
- ◆ Bottom cover for timing chain
⇒ [“2.1 Summary of components - cover for timing chains”](#),
[page 102](#) .
- ◆ Crankcase ventilation
⇒ [“1.1 Summary of components - cylinder head”](#), [page 73](#) .

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4.3 Removing and installing camshaft control valve 1 - N205-

Removing

- Disconnect plug from the camshaft adjustment valve 1 - N205-1-.
- Unscrew screw -arrows- and remove camshaft control valve 1 - N205- .

Installing

The installation occurs in reverse order.

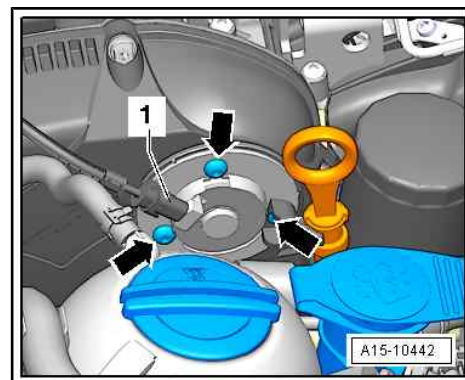
Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Camshaft control valve 1 - N205-
⇒ ["2.1 Summary of components - cover for timing chains", page 102](#)



4.4 Removing and installing valve stem seal

⇒ ["4.4.1 Removing and installing valve stem seals with cylinder head installed", page 147](#)

⇒ ["4.4.2 Removing and installing valve stem seals with cylinder head removed", page 151](#)

4.4.1 Removing and installing valve stem seals with cylinder head installed

Special tools and workshop equipment required

- ◆ Spark plug wrench , e.g. -3122 B-
- ◆ Valve stem seal extractor - MP1-230 (3364)-
- ◆ valve stem seal insertion tool - MP1-233 (3365)-
- ◆ Adapter - T40012-
- ◆ Disassembly and assembly device for valve collets - VAS 5161-
- ◆ Guide plate for FSI engine - VAS 5161/19C-

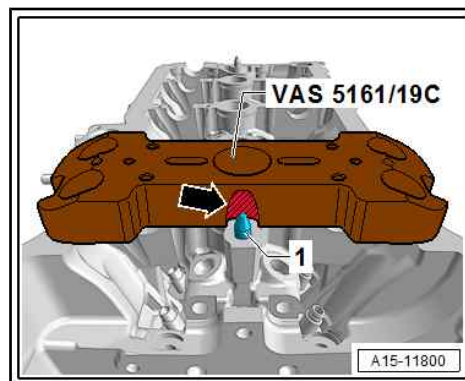
Remove valve stem seal

- Remove the camshafts
⇒ ["4.2 Removing and installing camshafts", page 130](#)
- When installing again, mark the assignment of the roller rocker arms and the hydraulic clearance compensation elements.
- Remove the roller rocker arms together with the hydraulic balancing elements and lay aside on a clean surface.
- Remove the spark plugs with spark plug wrench - 3122 B- .

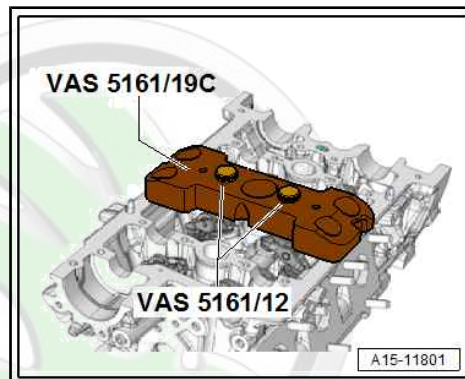


Process the guide plate

- Check whether the Guide plate for FSI engine - VAS 5161/19C- with recess -arrow- has been reworked.
- If necessary, adjust the guide plate for FSI engine - VAS 5161/19C- in the area -arrow- in such a way that the guide plate is in contact with the cylinder head and the guide pin -1- is free.

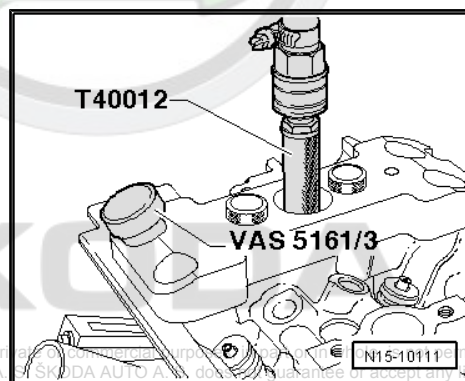


- Screw on guide plate for the FSI engine - VAS 5161/19C- with knurled screws - VAS 5161/12- onto the cylinder head.
- Position piston of the relevant cylinder in “BDC”.



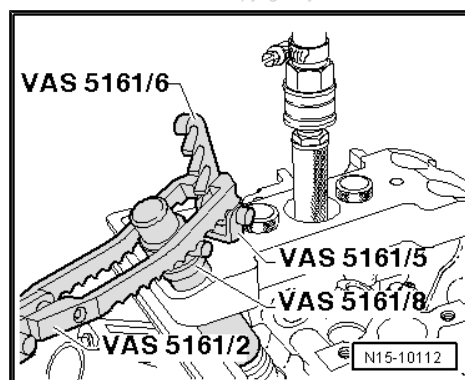
- Insert adapter - T40012- in the opening for the spark plug.
- Connect compressed air source at a pressure of min. 0.6 MPa (6 bar).

Insert the impact drift -VAS 5161/3- into the guide plate and knock off the tightly fitted valve collets using a plastic hammer.



For inlet side

- Screw in detent part - VAS 5161/6- with interlocking fork - VAS 5161/5- into the middle threaded bore of the guide plate for the FSI engine - VAS 5161/19C- .

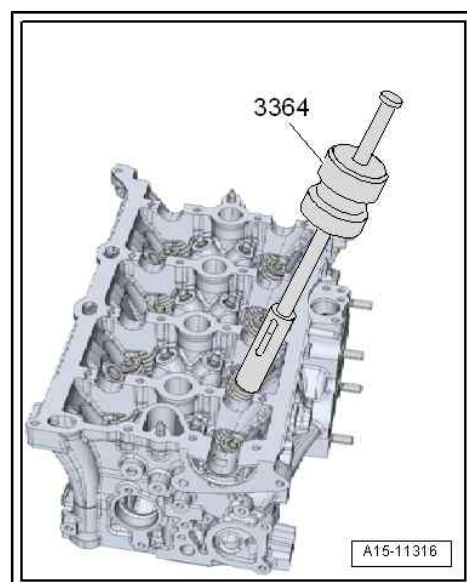
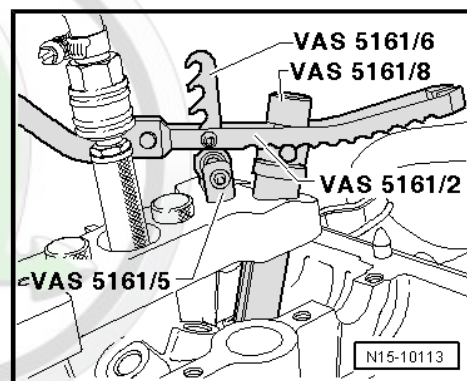


For exhaust side

- Screw in detent part - VAS 5161/6- with interlocking fork - VAS 5161/5- into the middle threaded bore of the guide plate for the FSI engine - VAS 5161/19C- .

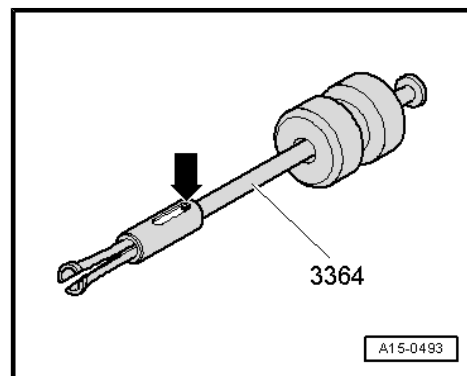
Continued for inlet and outlet side

- Insert the mounting cartridge - VAS 5161/8- into the corresponding bore of the Guide plate for the FSI engine - VAS 5161/19C- .
- Hook pressure fork - VAS 5161/2- into the detent part - VAS 5161/6- .
- Press the assembly cartridge - VAS 5161/8- down; at the same time, turn the knurled screw on the assembly cartridge - VAS 5161/8- to the right so that the nibs lie between the valve collets.
- Move the knurled screw to and fro slightly, by doing so the valve collets are pressed apart and are installed in the assembly cartridge.
- Release the pressure fork - VAS 5161/2- .
- Remove assembly cartridge - VAS 5161/8- .
- Pull off valve stem seal with extractor for valve stem seal - MP1-230 (3364)- .



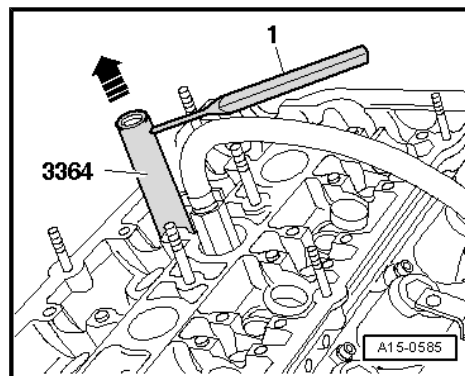
If the extractor for valve seal - MP1-230 (3364)- cannot be used due to limited space:

- Remove the dowel pin -arrow- with a mandrel and remove the impact attachment.





- Set the lower part of the valve stem seal extractor - MP1-230 (3364)- onto the valve stem seal.
- Insert the mandrel -1- into the bore in the lower part of the extractor.
- Remove the assembly lever onto the assembly device and pull out the valve stem seal -arrow-.



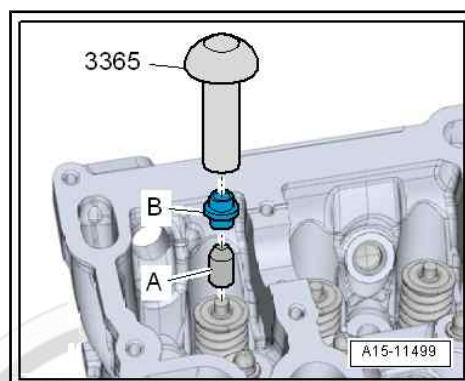
Install the valve stem seal



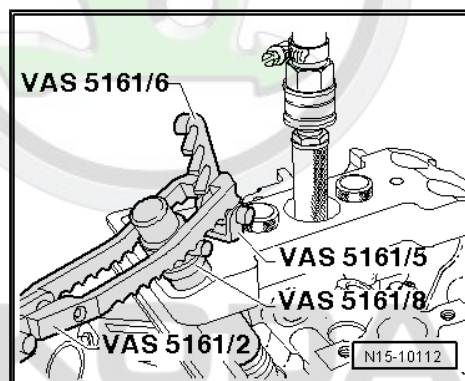
NOTICE

Risk of damage to valve stem seals during installation.

- Fit the plastic bushing -A-, which is enclosed with the new valve stem seals -B-, onto the valve stem.
- Lightly oil sealing lip of the valve stem seal.
- Slide the valve stem seal onto the plastic bushing.
- Carefully press the valve stem seal with the valve stem seal insertion tool - 3365- onto the valve guide.
- Remove plastic sleeve -A-.
- Insert the valve spring and the valve spring retainer.
- Install the disassembly and assembly device for valve collets - VAS 5161- as shown.



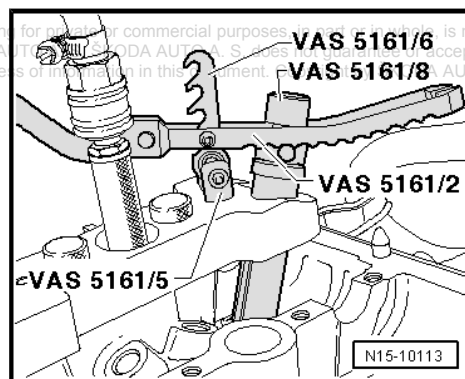
Inlet side



Outlet side

If the valve collets were removed from the assembly cartridge - VAS 5161/8- , they must first be reinserted.

To do this, use the insertion device - VAS 5161/18- .



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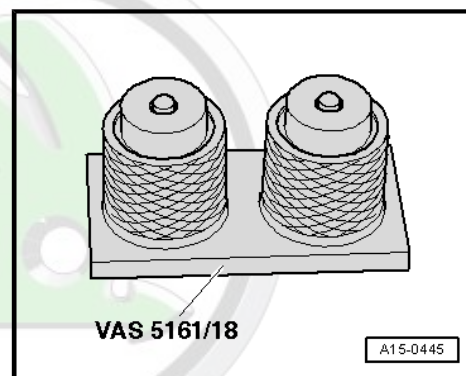
- Place valve cone pieces into the insertion device - VAS 5161/18- .
- The large diameter of the valve collets points to the top.
- Press assembly cartridge - VAS 5161/8- from the top onto the insertion device - VAS 5161/18- and lift up the valve collets.

Proceed with installation

- Press down mounting cartridge - VAS 5161/8- with pressure fork - VAS 5161/2- .
- Turn the knurled screw of the mounting cartridge - VAS 5161/8- back and forth at the same time and pull the screw upwards.
- Release the pressure fork - VAS 5161/2- on tightened knurled screw.
- Remove disassembly and assembly device for valve collets - VAS 5161- .

Further installation occurs in reverse order.

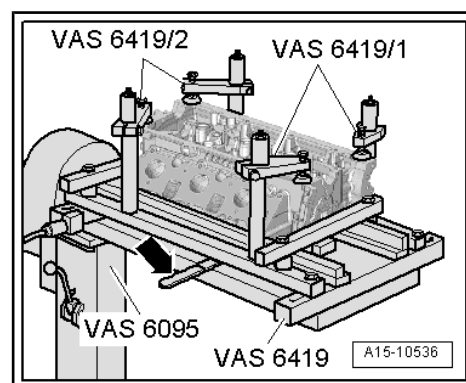
- Install camshafts
⇒ [“4.2 Removing and installing camshafts”, page 130](#) .



4.4.2 Removing and installing valve stem seals with cylinder head removed

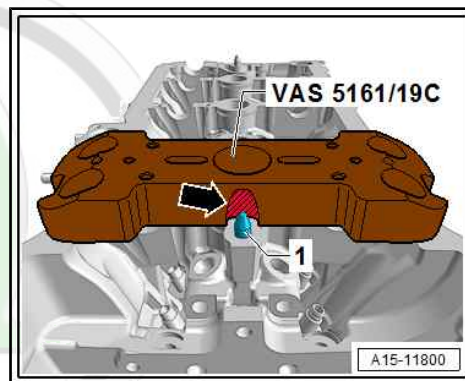
Special tools and workshop equipment required

- ◆ Extractor - MP1-230 (3364)-
- ◆ valve stem seal insertion tool - MP1-233 (3365)-
- ◆ Disassembly and assembly tool for valve collets - VAS 5161-
- ◆ Guide plate for FSI engine - VAS 5161/19B-
- ◆ Engine and gearbox mount - VAS 6095-
- ◆ Cylinder head tensioning device - VAS 6419-
- Cylinder head removed
⇒ [“1.2 Removing and installing cylinder head”, page 77](#) .
- Remove the camshafts
⇒ [“4.2 Removing and installing camshafts”, page 130](#) .
- When installing again, mark the assignment of the roller rocker arms and the hydraulic clearance compensation elements.
- Remove the roller rocker arms together with the hydraulic balancing elements and lay aside on a clean surface.
- Insert the cylinder head tensioning device - VAS 6419- into the engine and gearbox jack - VAS 6095- .
- Tension the cylinder head in the cylinder head tensioning device, as shown in the illustration.
- Connect cylinder head tensioning device to compressed air.
- Adjust the air bellows with the lever -arrow- below the combustion chamber on which the valve stem seals should be removed.
- Allow just enough air to flow into the air bag so that it applied to the valve disc.

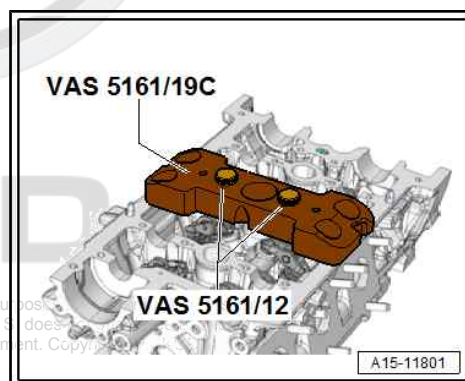




- Check whether the Guide plate for FSI engine - VAS 5161/19C- with recess -arrow- has been reworked.
- If necessary, adjust the guide plate for FSI engine - VAS 5161/19C- in the area -arrow- in such a way that the guide plate is in contact with the cylinder head and the guide pin -1- is free.



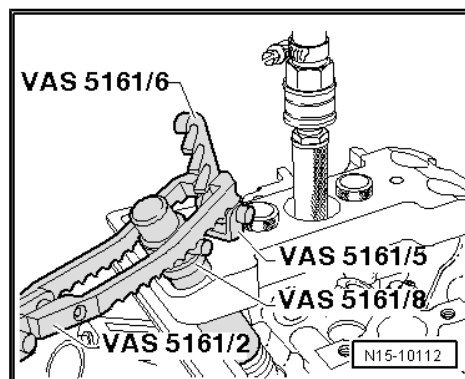
- Screw on guide plate for the FSI engine - VAS 5161/19C- with knurled screws - VAS 5161/12- onto the cylinder head.
- Insert the impact drift -VAS 5161/3- into the guide plate and knock off the tightly fitted valve collets using a plastic hammer.



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For inlet side

- Screw in detent part - VAS 5161/6- with interlocking fork - VAS 5161/5- into the middle threaded bore of the guide plate for the FSI engine - VAS 5161/19B- .

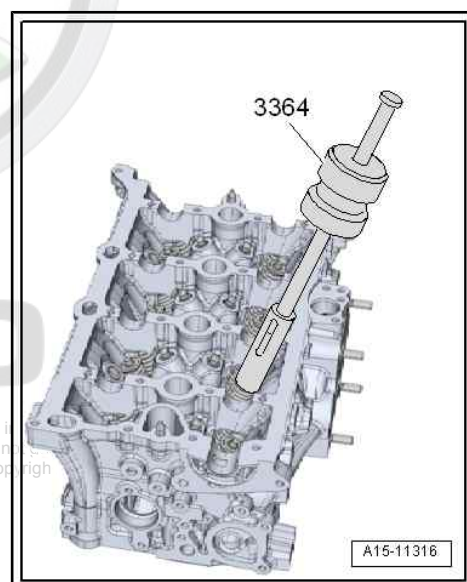
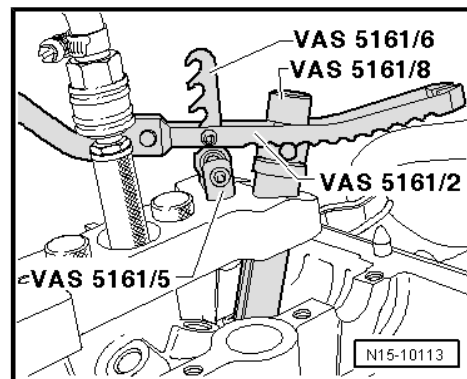


For exhaust side

- Screw in detent part - VAS 5161/6- with interlocking fork - VAS 5161/5- into the middle threaded bore of the guide plate for the FSI engine - VAS 5161/19C- .

Continued for inlet and outlet side

- Insert the mounting cartridge - VAS 5161/8- into the corresponding bore of the Guide plate for the FSI engine - VAS 5161/19C- .
- Hook pressure fork - VAS 5161/2- into the detent part - VAS 5161/6- .
- Press the assembly cartridge - VAS 5161/8- down; at the same time, turn the knurled screw on the assembly cartridge - VAS 5161/8- to the right so that the nibs lie between the valve collets.
- Move the knurled screw to and fro slightly, by doing so the valve collets are pressed apart and are installed in the assembly cartridge.
- Release the pressure fork - VAS 5161/2- .
- Remove assembly cartridge - VAS 5161/8- .
- Pull off valve stem seal with extractor for valve stem seal - MP1-230 (3364)- .



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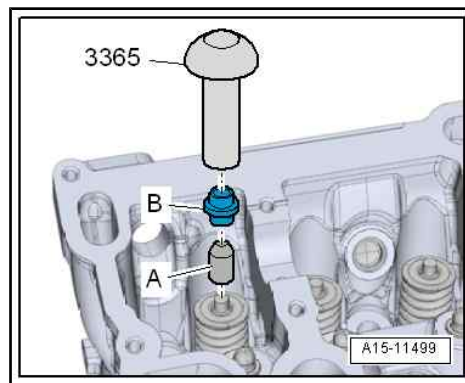
Install the valve stem seal



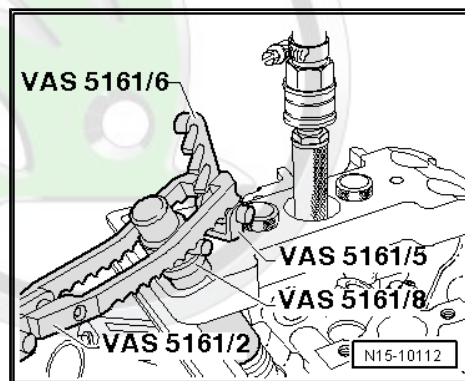
NOTICE

Risk of damage to valve stem seals during installation.

- Fit the plastic bushing -A-, which is enclosed with the new valve stem seals -B-, onto the valve stem.
- Lightly oil sealing lip of the valve stem seal.
- Slide the valve stem seal onto the plastic bushing.
- Carefully press the valve stem seal with the valve stem seal insertion tool - 3365- onto the valve guide.
- Remove plastic sleeve -A-.
- Insert the valve spring and the valve spring retainer.
- Install the disassembly and assembly device for valve collets - VAS 5161- as shown.



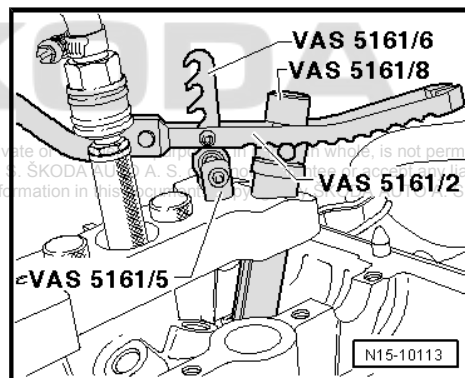
Inlet side



Outlet side

If the valve collets were removed from the assembly cartridge - VAS 5161/8- , they must first be reinserted.

To do this, use the insertion device - VAS 5161/18-



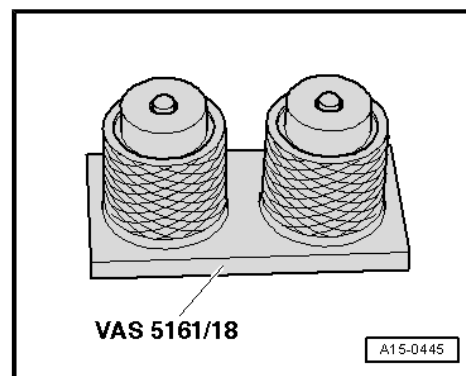
- Place valve cone pieces into the insertion device - VAS 5161/18- .
- The large diameter of the valve collets points to the top.
- Press assembly cartridge - VAS 5161/8- from the top onto the insertion device - VAS 5161/18- and lift up the valve collets.

Proceed with installation

- Press down mounting cartridge - VAS 5161/8- with pressure fork - VAS 5161/2- .
- Turn the knurled screw of the mounting cartridge - VAS 5161/8- back and forth at the same time and pull the screw upwards.
- Release the pressure fork - VAS 5161/2- on tightened knurled screw.
- Remove disassembly and assembly device for valve collets - VAS 5161- .

Further installation occurs in reverse order.

- Install camshafts
⇒ [“4.2 Removing and installing camshafts”, page 130](#) .
- Install cylinder head
⇒ [“1.2 Removing and installing cylinder head”, page 77](#) .



4.5 inspecting valve guides

Special tools and workshop equipment required

- ◆ Universal dial gauge bracket - MP 3-447 (VW 387)-
- ◆ Dial gauge

Test sequence

- Insert the valve into the valve guide in such a way that the end of the valve stem terminates with the valve guide.

Because of the different stem diameter of the inlet and outlet valves, use inlet valves in inlet guides and outlet valves in outlet guides.

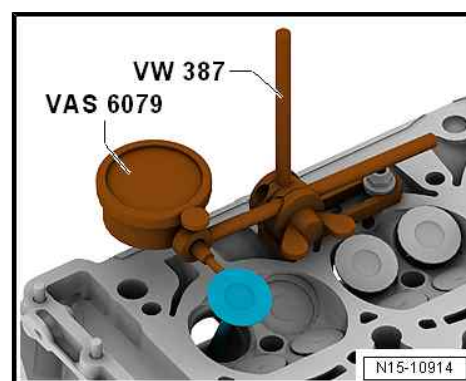
- Determine valve rock.

The minimum dimension for inlet and exhaust valve: 0.8 mm



Note

- ◆ *If the wear limit is exceeded, repeat measurement with new valves. If the wear limit is again exceeded, replace cylinder head. The valve guides cannot be changed.*
- ◆ *If the valve is replaced when carrying out repair work, use a new valve for the measurement.*



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17 – Lubrication

1 Sump, oil pump

⇒ [“1.1 Assembly overview - pan/oil pump”, page 156](#)

⇒ [“1.2 Removing and installing the bottom part of the oil sump”, page 159](#)

⇒ [“1.3 Removing and installing oil pump”, page 161](#)

⇒ [“1.4 Removing and installing top part of the oil sump”, page 162](#)

1.1 Assembly overview - pan/oil pump



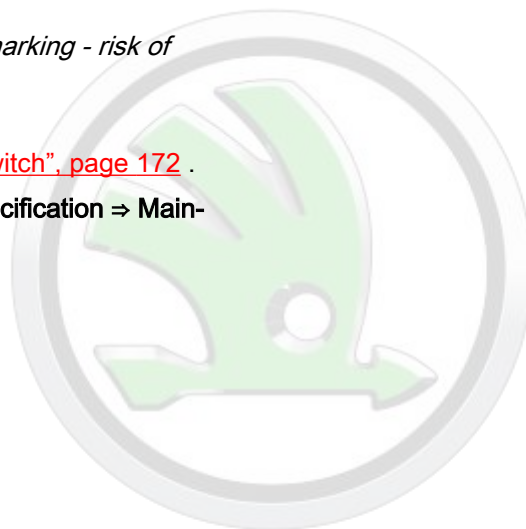
Note

- ◆ *Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.*
- ◆ *If considerable quantities of metal swarf or abrasion are found in the engine oil when carrying out engine repairs, carefully clean the oil galleries in order to avoid consequential damage and additionally replace the oil injection nozzles and the oil filters.*
- ◆ *The oil level must not be above the max. marking - risk of damage to catalytic converter!*

Inspecting oil pressure

⇒ [“3.3 Testing oil pressure and oil pressure switch”, page 172](#) .

Check the engine oil, amount of oil and oil specification ⇒ Maintenance ; Booklet Octavia II/Superb II/Yeti



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1 - Oil level and oil temperature transmitter - G266-

2 - Seal

- ☐ replace

3 - Screw

- ☐ Replace after disassembly
- ☐ Tightening torque and tightening order
⇒ Fig. "Lower parts of the oil sump- tightening order", page 158

4 - Bottom part of oil sump

- ☐ Removing and installing
⇒ "1.2 Removing and installing the bottom part of the oil sump", page 159

5 - Screw

- ☐ 9 Nm

6 - Baffle

- ☐ replace

7 - Screw

- ☐ M6 thread: 9 Nm
- ☐ M8 thread: 20 Nm

8 - Oil pump

- ☐ Removing and installing
⇒ "1.3 Removing and installing oil pump", page 161

9 - Fitting sleeve

10 - Chain tensioner

11 - Screw

- ☐ 9 Nm

12 - Screw

- ☐ only the engines with identification characters CDAA, CDAB, CCZA
- ☐ 9 Nm

13 - Oil pressure control valve - N428-

- ☐ only the engines with identification characters CDAA, CDAB, CCZA
- ☐ Removing and installing
⇒ "3.3.3 Removing and installing valve for oil pressure control N428", page 174

14 - O-ring

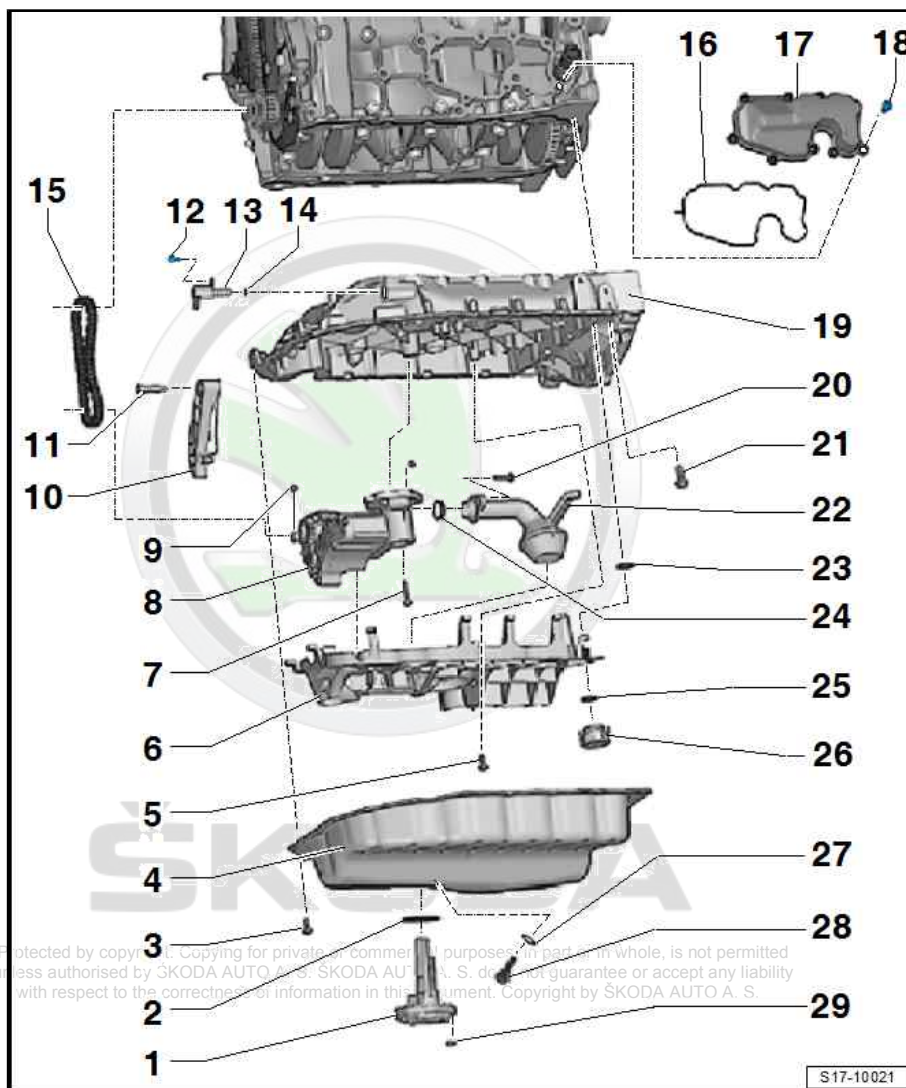
- ☐ only the engines with identification characters CDAA, CDAB, CCZA
- ☐ replace

15 - Drive chain for oil pump

- ☐ before removing mark running direction

16 - Seal

- ☐ replace





17 - Oil separator

18 - Screw

- Tightening torque and tightening order ⇒ [Fig. "Oil separator - tightening sequence", page 159](#)

19 - Top part of the oil sump

- Removing and installing ⇒ ["1.4 Removing and installing top part of the oil sump", page 162](#)

20 - Screw

- 9 Nm

21 - Screw

- Replace after disassembly
- Tightening torque and tightening order
⇒ [Fig. "Lower parts of the oil sump- tightening order", page 159](#)

22 - Suction line

- Clean strainer if dirty
- Pay attention to the part number

23 - O-ring

- replace

24 - Sealing ring

- replace

25 - O-ring

- replace

26 - Non-return valve

27 - Sealing ring

- replace

28 - Oil drain plug

- 30 Nm

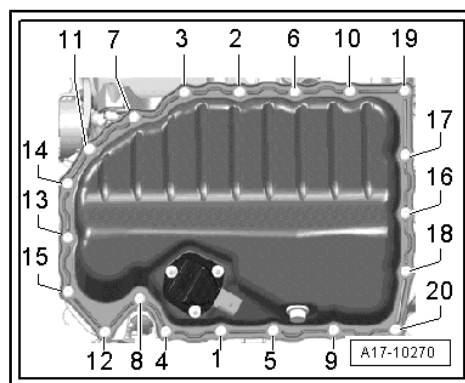
29 - Nut

- 9 Nm
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Lower parts of the oil sump- tightening order

- Replace bolts after removal.
- Tighten all bolts fully in the given sequence:

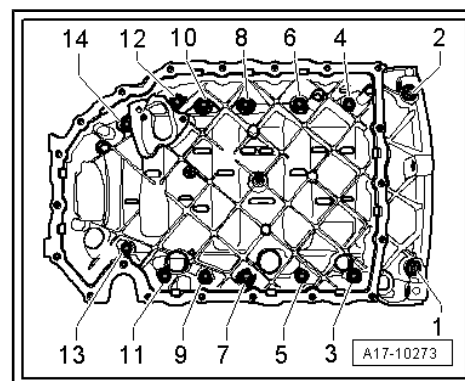
Level	Screws	Tightening torque/torque angle
1	-1- to -20-	Tighten by hand as far as the stop
2	-1- to -20-	8 Nm
3	-1- to -20-	Turn 45° further



Lower parts of the oil sump- tightening order

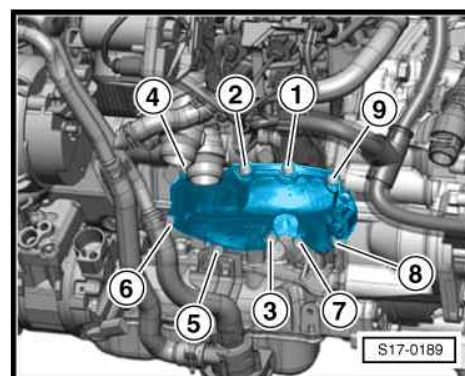
- Replace bolts after removal.
- Tighten all bolts fully in the given sequence:

Level	Screws	Tightening torque/torque angle
1	-1- to -14-	Tighten by hand as far as the stop
2	-1- to -14-	15 Nm
3	-1- to -14-	Turn 90° further



Oil separator - tightening sequence

- Tighten the bolts in the sequence -1- through -9- to 9 Nm.



1.2 Removing and installing the bottom part of the oil sump

Special tools and workshop equipment required

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- ◆ Catch pan, e.g. -VAS 6208-
- ◆ Cleaning and degreasing agent, e.g. -D 009 401 04-
- ◆ Sealant remover Gasket Stripper (stock code GST, stock item No. R 34402), manufacturer Retech s.r.o.
- ◆ Silicone sealant ⇒ ETKA - Electronic catalogue of original parts

Removing

- Remove noise insulation ⇒ Body Work ⇒ Rep. gr. 50 .
- Drain off engine oil.



Note

Please observe all disposal instructions!

- Disconnect plug from oil level and oil temperature sender - G266- .



- Unscrew the screws -20- to -1-.
- Remove lower part of oil sump. If necessary, undo the top part of the oil sump by applying slight blows with a rubber-headed hammer.

Installing

CAUTION

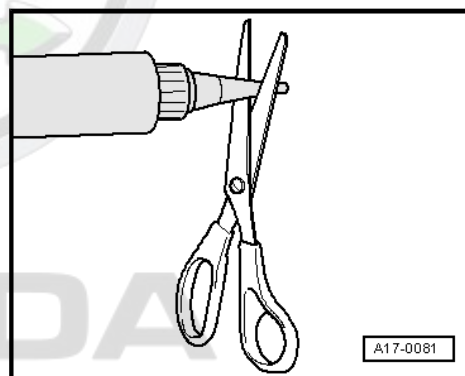
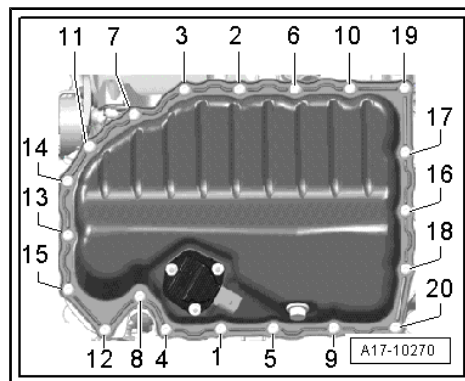
Wear protective gloves when working with sealant and grease remover!

- Expose sealing surface on upper and lower part of the oil pan and remove sealant residues with chemical sealant remover.
- Degrease the sealing surfaces.



Note

- ♦ Pay attention to the use by date on sealant.
- ♦ The oil pan must be installed and tightened firmly immediately after applying the sealant.
- Cut off nozzle tube at the front marking (Ø of nozzle approx. 3 mm).

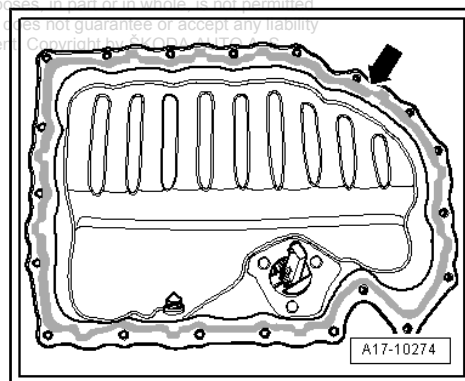


- Apply silicone sealant to clean sealing surface of the lower part of the oil pan (see figure). The sealant bead must be:
 - ♦ 2-3 mm thick.
 - ♦ run past the area around the bolt holes on the inside -arrow-



Note

The sealant bead must not be thicker otherwise excess sealant may get into the oil pan and block the strainer in the oil pump suction pipe.



- Immediately fit the lower part of the oil pan and tighten the new screws in the sequence -1- to -20- as follows
⇒ Fig. [“Lower parts of the oil sump- tightening order”](#), page 158 .



Note

*Let sealant dry for approx. 30 minutes after installing oil sump.
Only then fill with engine oil.*

Further installation occurs in reverse order. However, pay attention to the following:

- Fill engine oil ⇒ Maintenance ; Booklet Octavia II/Superb II/ Yeti .

Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ♦ Lower part of the oil pan
⇒ [“1.1 Assembly overview - pan/oil pump”](#), page 156 .

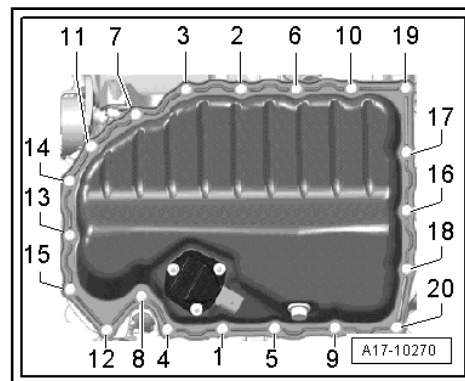
1.3 Removing and installing oil pump

Special tools and workshop equipment required

- ♦ Assembly tool - T10118-
- ♦ Rig tool - T40265-

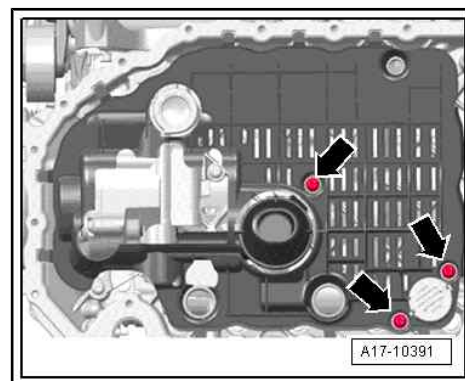
Removing

- Remove oil sump bottom part
⇒ [“1.2 Removing and installing the bottom part of the oil sump”](#), page 159 .
- Remove baffle -arrows-.



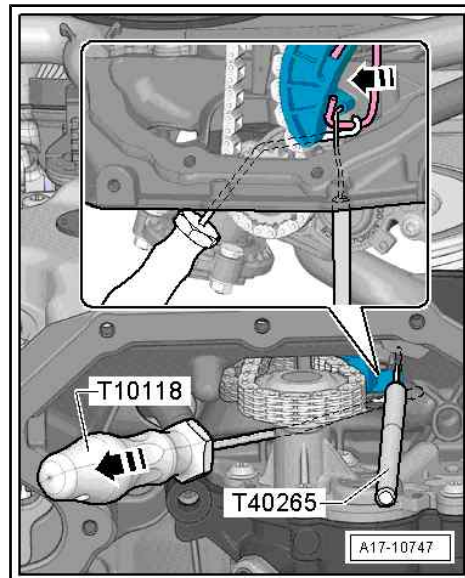
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- Pull the tensioning spring of the chain tensioner with assembly device - T10118- in -direction of arrow- and secure with extractor - T40265- .

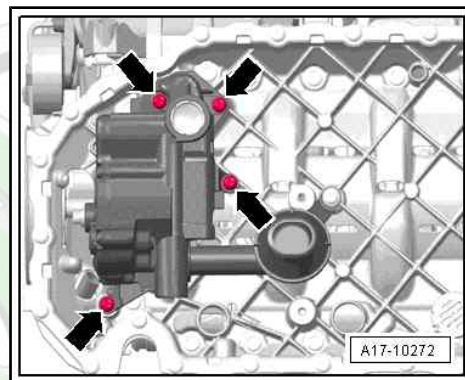


- Unscrew the screws -arrows- and swing out the oil pump with chain sprocket.

Installing

Further installation occurs in reverse order. However, pay attention to the following:

- Before installing the oil pump, check the sieve in the suction line and the oil channels in the upper part of the oil sump for dirt.
- Check whether both dowel sleeves are present for centering the oil pump.
- Replace baffle.



Note

The baffle has a plastic ribbing which deforms over a longer period of tightening. The plastic ribbing ensures that the baffle sits tight and does not rattle. For this reason, the baffle must always be replaced.

- Install oil sump bottom part
⇒ [“1.2 Removing and installing the bottom part of the oil sump”, page 159](#) .

Tightening torques - summaries of components

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Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ♦ Oil pump
⇒ [“1.1 Assembly overview - pan/oil pump”, page 156](#) .

1.4 Removing and installing top part of the oil sump

Special tools and workshop equipment required

- ♦ Assembly tool - T10118-

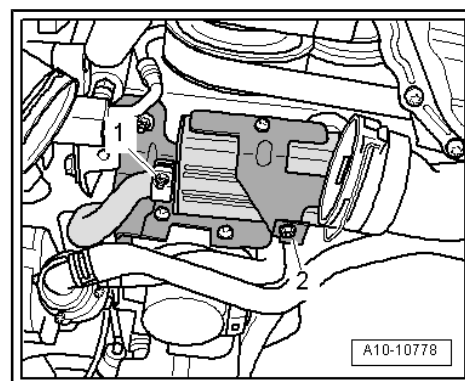
- ◆ Rig tool - T40265-
- ◆ Cleaning and degreasing agent , e.g. -D 009 401 04-
- ◆ Sealant remover Gasket Stripper (stock code GST, stock item No. R 34402), manufacturer Retech s.r.o.
- ◆ Silicone sealant ⇒ ETKA - Electronic catalogue of original parts

Removing

- Remove the sealing flange on the gearbox side
⇒ ["2.4 Removing and installing sealing flange on gearbox side", page 47](#) .
- Remove oil pump
⇒ ["1.3 Removing and installing oil pump", page 161](#) .
- Remove the front right wheelhouse liner ⇒ Body Work; Rep. gr. 66 .

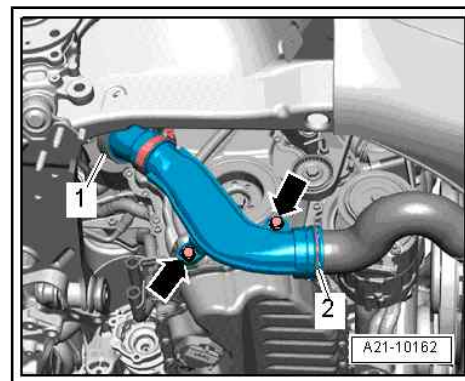
Vehicles with auxiliary heating

- Unscrew clamp -1- and remove screw -2-.
- Remove the muffler for the auxiliary heating.

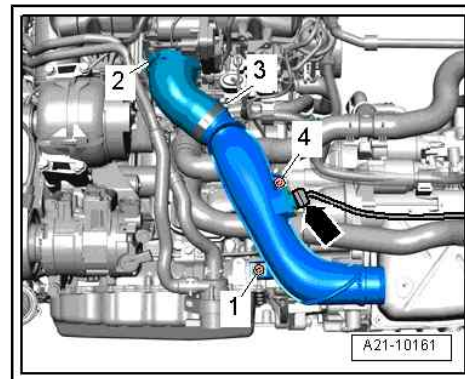


Continued for all vehicles

- Remove screws -arrows-.
- Remove charge-air pipe. To do so, remove the terminals -1- and -2-.



- Remove screw -1- for the charge-air pipe from the upper part of the oil sump.
- Remove the holder for the wiring harness -arrow- on the upper part of the oil sump.



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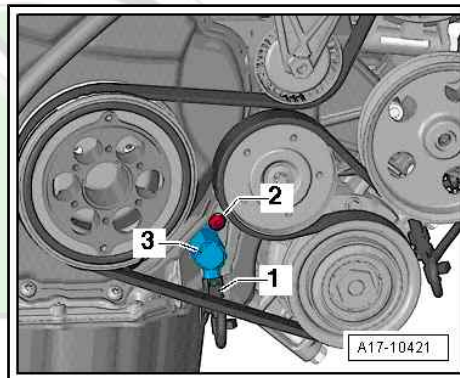


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Octavia II 2004 ➤ , Octavia II 2010 ➤ , Superb II 2008 ➤ , Superb II 20 ...
1.8/112; 118 kW; 2.0/147 kW TSI engine - Edition 06.2019

For engines with identification characters CDAA, CDAB, CCZA

- Disconnect connector -1- from the oil pressure control valve - N428- -3-.



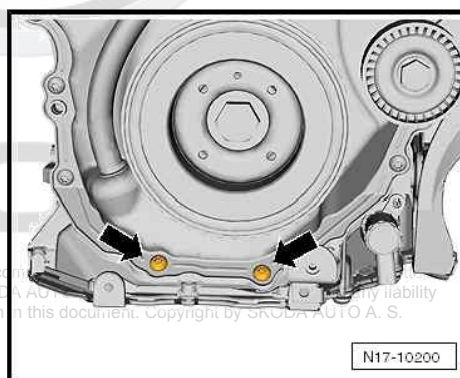
Continued for all vehicles

- Unscrew screws -arrows- from the bottom cover for timing chain.
- Using a sharp flat spatula, cut through the bottom cover for timing chain at the contact point with the upper part of the oil sump.



NOTICE

To avoid later seals, do not deform the bottom cover for the timing chain and, when pushing off the upper part of the oil sump, do not reach between the screw points.



CAUTION

Danger of injury! When removing the upper part of the oil sump, the spring of the chain tensioner for the oil pump drive jumps from the upper part of the oil sump to the bottom cover for the timing chain. While removing the upper part of the oil sump, do not reach between the upper part of the oil sump and the lower cover for the timing chain.

- Release screws -1- to -14- and remove upper part of oil pan. If necessary, undo the top part of the oil sump by applying slight blows with a rubber-headed hammer.

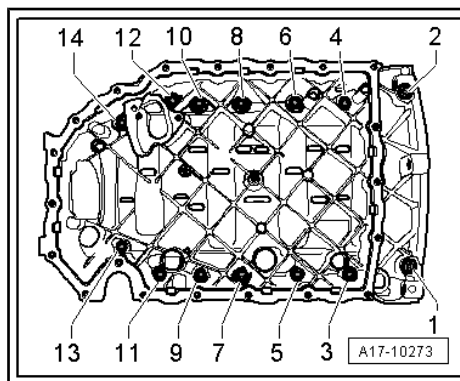
Installing



CAUTION

Wear protective gloves when working with sealant and grease remover!

- Remove residual sealant from the sealing surfaces on the cylinder block, upper part of the oil sump, and on the bottom cover with chemical sealant remover.
- Degrease the sealing surfaces.

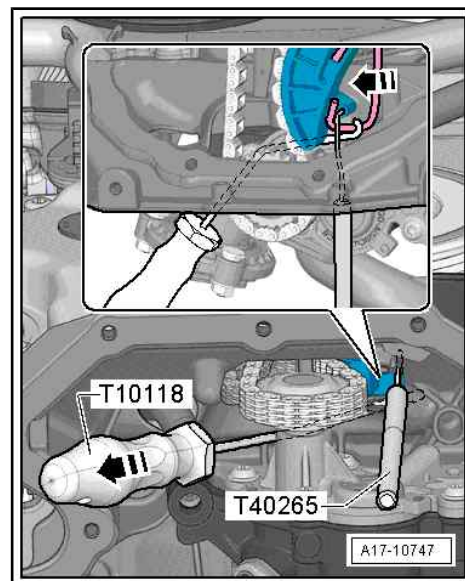


- Check the oil ducts in upper part of oil sump and in cylinder block for contamination.
- Pull the tensioning spring of the chain tensioner for the oil pump with assembly device - T10118- in -direction of arrow- and secure with extractor - T40265- .

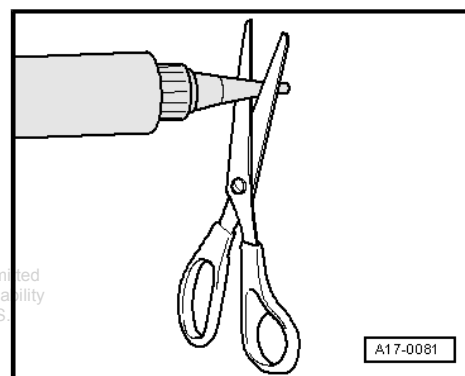


Note

- ◆ Pay attention to the use by date on sealant.
- ◆ The upper part of the oil sump must be installed and tightened firmly immediately after applying the sealant.



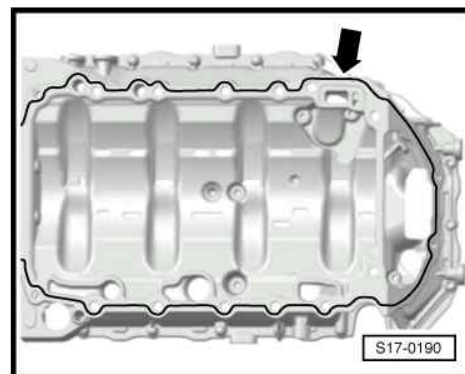
- Cut off nozzle tube at the front marking ($\varnothing$ of nozzle approx. 3 mm).



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- Apply silicone sealant to clean sealing surface of the lower part of the oil pan (as shown) -arrow-.





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Octavia II 2004 ➤ , Octavia II 2010 ➤ , Superb II 2008 ➤ , Superb II 20 ...

1.8/112; 118 kW; 2.0/147 kW TSI engine - Edition 06.2019

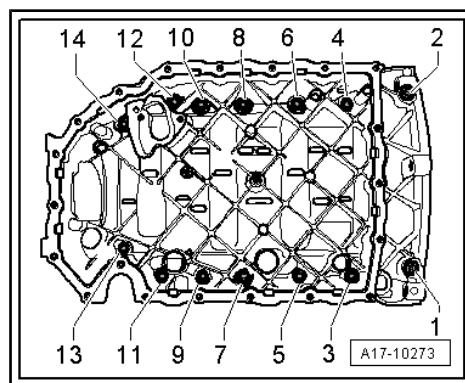
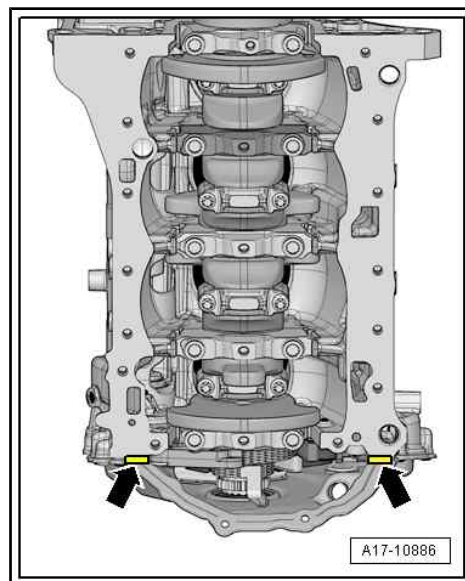
- Also, apply a little silicone sealant between the cylinder block and the cover for the timing chain -arrows-.
- The adhesive bead must be 2...3 mm thick.



Note

- ◆ *The upper part of the oil sump must be installed and tightened firmly immediately after applying the sealant.*
- ◆ *The sealant bead must not be thicker otherwise excess sealant may get into the oil pan and block the strainer in the oil pump suction pipe.*

- Immediately fit the upper part of the oil pan, align it plane to the cylinder block on the gearbox side, and tighten the new screws in the sequence -1- to -14- as follows
⇒ [Fig. "Lower parts of the oil sump- tightening order"](#), [page 159](#) :



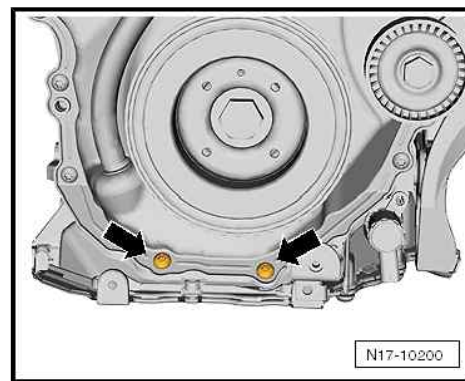
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- Insert the new screws -arrows-.
- Remove the extractor - T40265- from the chain tensioner of the oil pump.

Further installation occurs in reverse order. However, pay attention to the following:

- Install the sealing flange on the gearbox side
⇒ [“2.4 Removing and installing sealing flange on gearbox side”, page 47](#) .
- Install oil pump
⇒ [“1.3 Removing and installing oil pump”, page 161](#) .



Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Charge air pipe
⇒ [“2.1 Summary of components - charge air cooler”, page 274](#) .
- ◆ Bottom cover for timing chain
⇒ [“2.1 Summary of components - cover for timing chains”, page 102](#) .
- ◆ Sump top part
⇒ [“1.1 Assembly overview - pan/oil pump”, page 156](#) .

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2 Engine oil cooler

⇒ ["2.1 Removing and installing engine oil cooler", page 168](#)

2.1 Removing and installing engine oil cooler

Removing

- Remove the bracket for auxiliary units
⇒ ["1.4 Removing and installing bracket for auxiliary units", page 35](#) .
- Unscrew screws -4- and -5- and remove the engine oil cooler -3- with seal -2-.

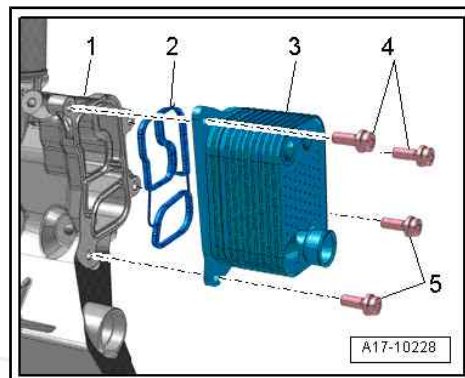
Installing

The installation occurs in reverse order. However, pay attention to the following:



Note

Replace seals and sealing rings.



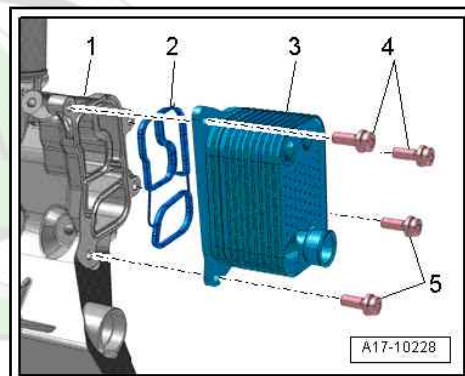
- Install the engine oil cooler -3- with a new seal -2-.
- Install the bracket for auxiliary units
⇒ ["1.4 Removing and installing bracket for auxiliary units", page 35](#) .

Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.



- ♦ Engine oil cooler
⇒ ["3.1 Summary of components - oil filter/oil pressure switch", page 169](#) .

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3 Oil filter, oil pressure switch

⇒ [“3.1 Summary of components - oil filter/oil pressure switch”, page 169](#)

⇒ [“3.2 Removing and installing oil pressure switch”, page 171](#)

⇒ [“3.3 Testing oil pressure and oil pressure switch”, page 172](#)

3.1 Summary of components - oil filter/oil pressure switch



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

1 - Bracket for auxiliary units

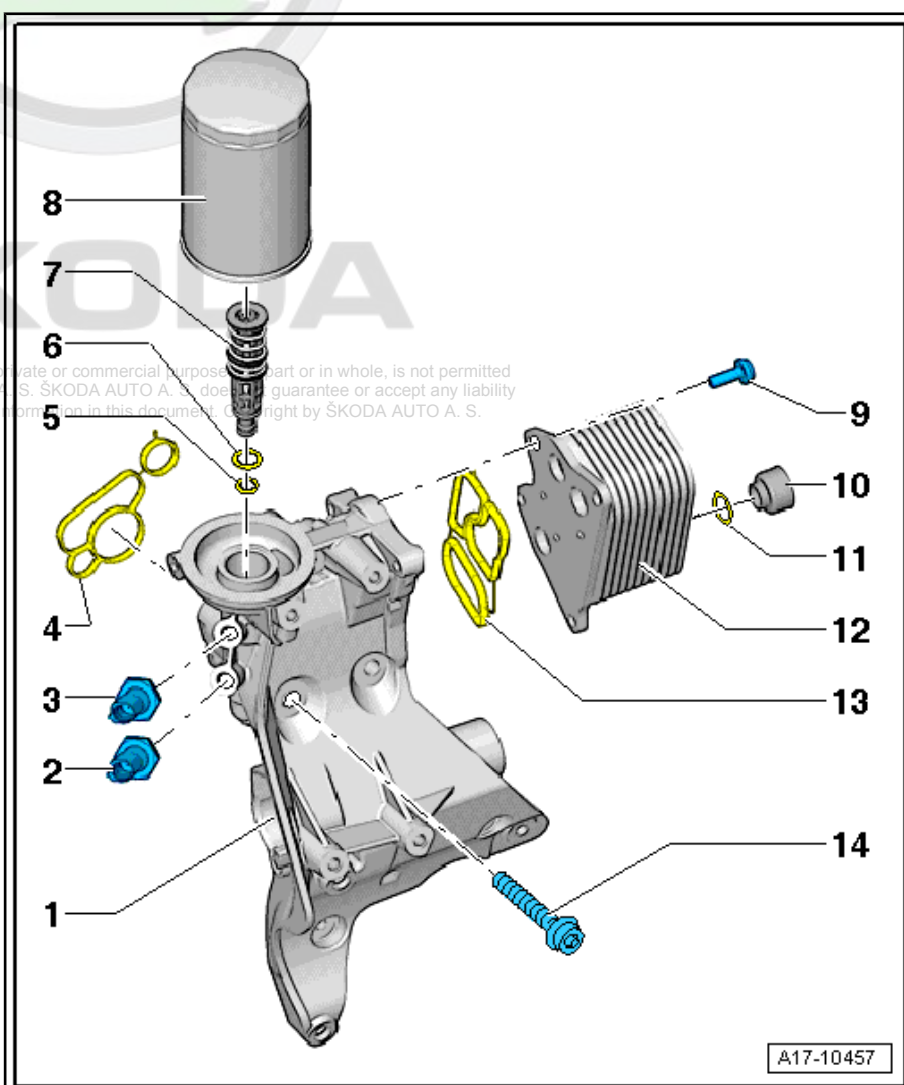
- ☐ with integrated oil filter holder
- ☐ Removing and installing
⇒ [“1.4 Removing and installing bracket for auxiliary units”, page 35](#)

2 - Oil pressure switch - F1/F22-

- ☐ on engine with identification characters BZB:
Oil pressure switch - F1-
0.12 - 0.16 MPa (1.2 - 1.6 bar)
- ☐ on engine with identification characters CDAA, CDAB, CCZA:
Oil pressure switch - F22-
0.215 - 0.295 MPa (2.15 - 2.95 bar)
- ☐ Check
⇒ [“3.3 Testing oil pressure and oil pressure switch”, page 172](#)
- ☐ Removing and installing
⇒ [“3.2.1 Removing and installing oil pressure switch F1/F22”, page 171](#)
- ☐ 20 Nm

3 - Oil pressure switch for reduced oil pressure - F378-

- ☐ only with the engine with identification characters CDAA, CDAB, CCZA
- ☐ 0.055 - 0.085 MPa (0.55 - 0.85 bar)
- ☐ Check ⇒ [“3.3 Testing oil pressure and oil pressure switch”, page 172](#)
- ☐ Removing and installing
⇒ [“3.2.2 Removing and installing oil pressure switch for reduced oil pressure F378”, page 172](#)
- ☐ 20 Nm





4 - Seal

- ☐ replace

5 - O-ring

- ☐ a part with valve unit

6 - O-ring

- ☐ a part with valve unit

7 - valve unit

- ☐ with O rings

8 - Oil filter

- ☐ Removing and installing ⇒ Maintenance ; Booklet Octavia II/Superb II/Yeti
- ☐ Remove and install with oil filter tool
- ☐ 22 Nm

9 - Screw

- ☐ 15 Nm

10 - Supports

11 - Sealing ring

- ☐ replace

12 - Engine oil cooler

- ☐ pay attention to the notes ⇒ [“1 Sump, oil pump”, page 156](#)
- ☐ ensure clearance to surrounding components
- ☐ Connection diagram for coolant hoses ⇒ [page 178](#)
- ☐ Removing and installing ⇒ [“2.1 Removing and installing engine oil cooler”, page 168](#)

13 - Seal

- ☐ replace

14 - Screw

- ☐ Replace after disassembly
- ☐ Tightening torque and tightening order ⇒ [Fig. “Bracket for auxiliary units - tightening order”](#), page 31

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3.2 Removing and installing oil pressure switch

⇒ [“3.2.1 Removing and installing oil pressure switch F1/F22”, page 171](#)

⇒ [“3.2.2 Removing and installing oil pressure switch for reduced oil pressure F378”, page 172](#)

3.2.1 Removing and installing oil pressure switch - F1/F22-

Removing

- Disconnect the plug connection -4- and remove the oil pressure switch - F1/F22- -3-.



Note

To prevent oil loss, insert a new oil pressure switch.

Installing

The installation occurs in reverse order. However, pay attention to the following:

- Renew O-ring.
- Checking the oil level.

Tightening torques - summaries of components

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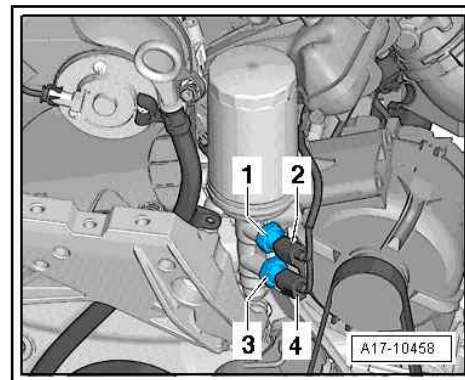


Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Oil pressure switch - F1/F22-

⇒ [“3.1 Summary of components - oil filter/oil pressure switch”, page 169](#).





3.2.2 Removing and installing oil pressure switch for reduced oil pressure - F378-

Removing

- Disconnect the plug connection -2- and unscrew the oil pressure switch for reduced oil pressure - F378- -1-.



Note

To prevent oil loss, insert a new oil pressure switch.

Installing

The installation occurs in reverse order. However, pay attention to the following:

- Renew O-ring.
- Checking the oil level.

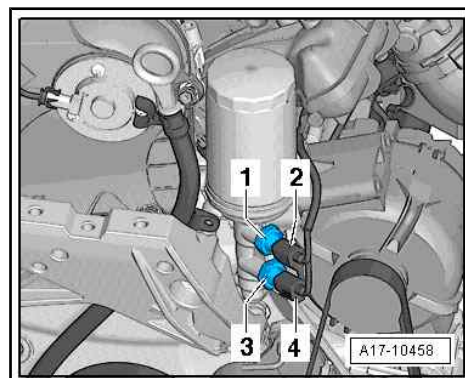
Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ♦ Oil pressure switch for reduced oil pressure - F378-
⇒ [“3.1 Summary of components - oil filter/oil pressure switch”, page 169](#) .



3.3 Testing oil pressure and oil pressure switch

⇒ [“3.3.1 Testing oil pressure switch”, page 173](#)

⇒ [“3.3.2 Testing oil pressure”, page 173](#)

⇒ [“3.3.3 Removing and installing valve for oil pressure control N428”, page 174](#)

Special tools and workshop equipment required

- ♦ Oil pressure tester , e.g. -V.A.G 1342-
- ♦ Voltage tester , e. g. -V.A.G 1527 B-
- ♦ Auxiliary measuring set, , e. g. -V.A.G 1594 C-
- ♦ Vehicle diagnosis, measurement and information system - VAS 505X-

Conditions

- Engine oil level o.k., test ⇒ Maintenance ; Booklet Octavia II/ Superb II/Yeti .
- Coolant temperature at least 80°C (radiator fan must have run at least once).



Note

Functional test and repair of the visual and acoustic oil pressure display ⇒ Current flow diagrams, Electrical fault finding and Fitting locations, ⇒ Vehicle diagnostic tester.

3.3.1 Testing oil pressure switch

For engines with identification characters BZB

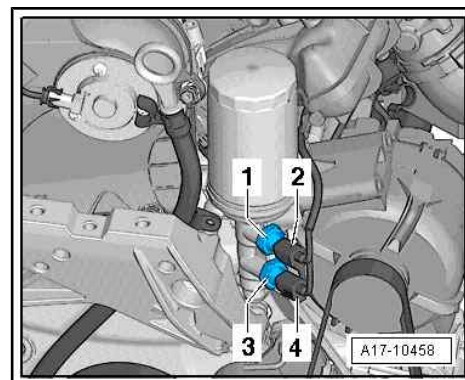
- Remove the oil pressure switch - F1- -3- (ignore Pos. -1-).

For engines with identification characters CDAA, CDAB, CCZA

- Remove oil pressure switch - F22- -3- or oil pressure switch for reduced oil pressure - F378- -1-.

Continued for all vehicles

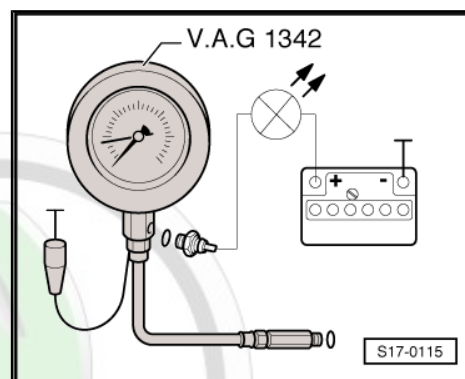
- Screw switch into the testing device.



- Screw the testing device into the oil filter holder instead of the removed oil pressure switch.
- Connect brown wire of tester to earth (-).
- Connect the voltage tester - V.A.G 1527 B- with auxiliary cables out of the measuring tool set - V.A.G 1594 C- to battery positive (+) and oil pressure switch.
- The LED must not light up.
- If the LED lights up, replace the oil pressure switch .

If the LED does not light up:

- Start engine and increase the engine speed.



For engines with identification characters BZB

- The LED must light up at an oil overpressure of 0.12...0.16 MPa (1.2...1.6 bar), if not replace oil pressure switch.

For engines with identification characters CDAA, CDAB, CCZA

- On the oil pressure switch - F22- the voltage tester must light up at 0.215 - 0.295 MPa (2.15 - 2.95 bar) oil overpressure, otherwise replace the oil pressure switch.
- On the oil pressure switch for reduced oil pressure - F378- the voltage tester must light up at 0.055 - 0.085 MPa (0.55 - 0.85 bar) oil overpressure, otherwise replace the oil pressure switch.

3.3.2 Testing oil pressure

For engines with identification characters BZB

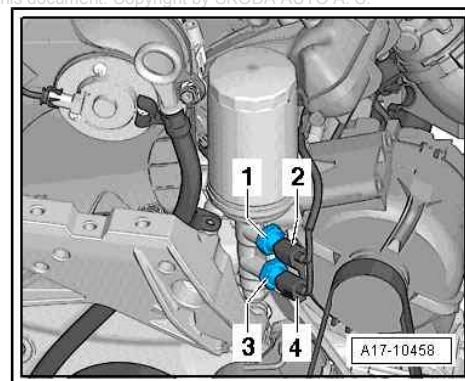
- Remove the oil pressure switch - F1- -3- (ignore Pos. -1-).

For engines with identification characters CDAA, CDAB, CCZA

- Remove oil pressure switch for reduced oil pressure - F378- -1-

Continued for all vehicles

- Screw switch into the testing device.





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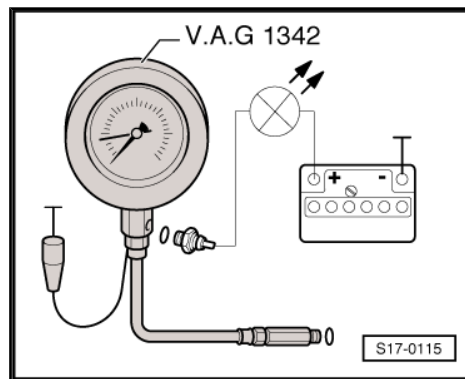
- Screw the testing device into the oil filter holder instead of the removed oil pressure switch.
- Start engine and increase the engine speed.

For engines with identification characters BZB

- At 2000 rpm, the oil overpressure is 0.27 ... 0.45 MPa (2.7 ... 4.5 bar).
- At a higher engine speed, the oil pressure must not be greater than 0.7 MPa (7 bar).

For engines with identification characters CDAA, CDAB, CCZA

- When idling, the oil overpressure is 0.12...0.21 MPa (1.2... 2.1 bar).
- At 2000 rpm, the oil overpressure is 0.16 ... 0.21 MPa (1.6 ... 2.1 bar).
- At 3700 rpm, the oil overpressure is 0.3 ... 0.4 MPa (3 ... 4 bar).



Note

On a new engine, the oil pressure during the first 1000 km can be between 0.3 ... 0.4 MPa (3...4 bar) at 2000 rpm.

Continued for all vehicles

If the measurement is less than the specification:

- Check the sieve in the suction line for contamination.



Note

Mechanical damage, such as bearing damage, may also be the cause of oil pressure that is too low.

If no fault is found:

- Replace oil pump
⇒ ["1.3 Removing and installing oil pump", page 161](#) .

If the set value is exceeded:

- Replace oil pump
⇒ ["1.3 Removing and installing oil pump", page 161](#) .



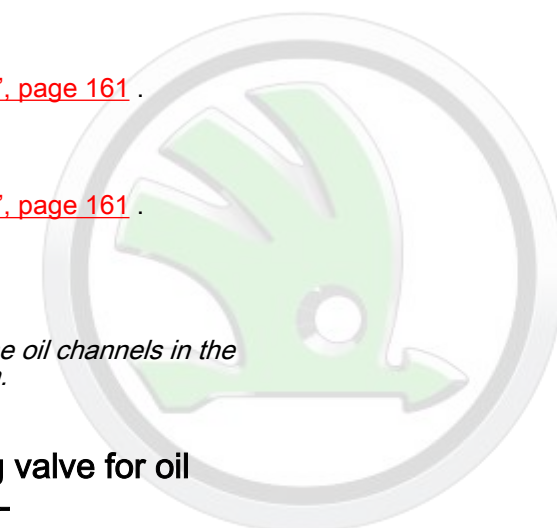
Note

Before installing the new oil pump, check the oil channels in the upper part of the oil sump for contamination.

3.3.3 Removing and installing valve for oil pressure control - N428-

Removing

- Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .



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- Disconnect the plug connections -1-, remove the screw -2- and remove the valve for oil pressure control - N428- -3-.

 Note

- ◆ Lay the V-ribbed belt to one side.
- ◆ To prevent oil leaks, plug in a new valve for oil pressure control immediately.

Installing

The installation occurs in reverse order. However, pay attention to the following:

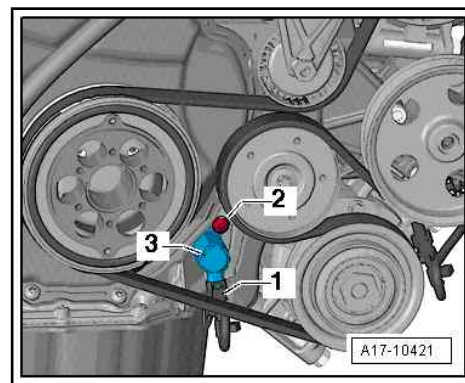
- Renew O-ring.
- Checking the oil level.

Tightening torques - summaries of components

 Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Oil pressure control valve - N428-
⇒ [“1.1 Assembly overview - pan/oil pump”, page 156](#) .



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19 – Cooling

1 Cooling system, coolant

⇒ [“1.1 Summary of components - Parts of the cooling system fitted to body”, page 176](#)

⇒ [“1.2 Connection diagram for coolant hoses”, page 178](#)

⇒ [“1.3 Draining and filling coolant”, page 179](#)

⇒ [“1.4 Check cooling system for leaks”, page 182](#)

1.1 Summary of components - Parts of the cooling system fitted to body

CAUTION

Hot steam may escape when the coolant expansion reservoir is opened. Wear safety goggles and safety clothing to avoid eye injuries and scalding. Cover the cap with a cloth and open carefully.



Note

- ◆ *Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.*
- ◆ *When the engine is warm the cooling system is under pressure. If necessary, release pressure before beginning repair work.*
- ◆ *The hose connections are secured with spring-type clips. In case of repair, only use spring-type clips ⇒ Electronic Catalogue of Original Parts .*
- ◆ *Spring-type clip pliers are recommended for installation of spring-type clips.*
- ◆ *Replace seals and sealing rings.*
- ◆ *When installing fit the coolant hoses free of stress, without them touching any other components (pay attention to the marking on the coolant connection).*
- ◆ *The arrows on the coolant pipes and the coolant hose ends must face each other.*

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1 - Top coolant hose

- ☐ to the coolant pump

2 - O-ring

- ☐ replace if damaged

3 - Radiator

- ☐ Removing and installing
⇒ [“4.2 Removing and installing radiator”, page 208](#)
- ☐ After replacing, fill with fresh coolant

4 - Seal

5 - Screw cap

- ☐ Check the overpressure valve in the screw cap
⇒ [“1.4 Check cooling system for leaks”, page 182](#)

6 - Connector

7 - Screw

- ☐ 3 Nm

8 - expansion reservoir

- ☐ with coolant shortage warning light sender - G32-
- ☐ Check the cooling system for tightness
⇒ [“1.4 Check cooling system for leaks”, page 182](#)

9 - Screw

- ☐ 5 Nm

10 - Screw

- ☐ 10 Nm

11 - Right radiator fan - V35-

- ☐ Removing and installing
⇒ [“4.1 Removing and installing fan shroud for radiator fan V7 and V35”, page 207](#)

12 - Radiator fan - V7-

- ☐ Removing and installing
⇒ [“4.1 Removing and installing fan shroud for radiator fan V7 and V35”, page 207](#)
- ☐ with radiator fan control unit - J293-

13 - Fan shroud

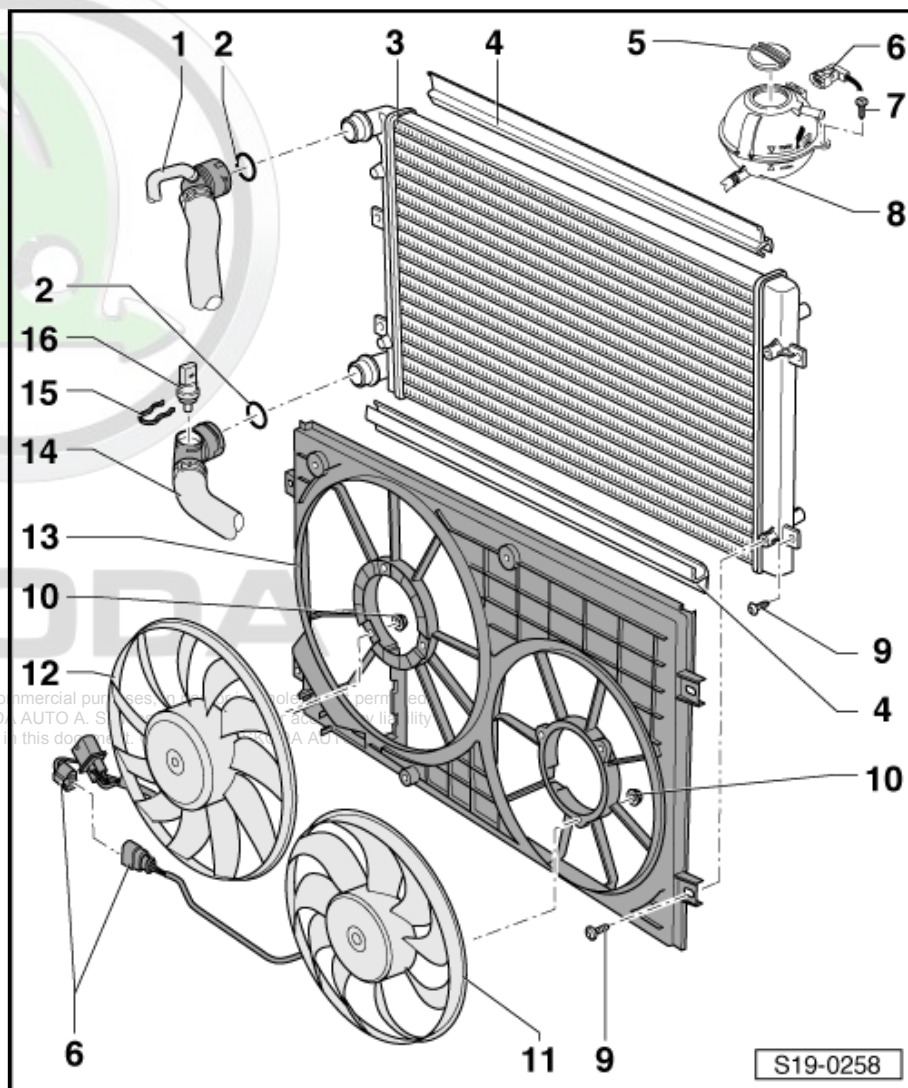
14 - Bottom coolant hose

- ☐ for the coolant regulator

15 - Retaining clip

16 - Thermoswitch or sender

- ☐ Thermoswitch for radiator fan - F18-
- ☐ Tightening torque: 2.5 Nm
- ☐ 3-pin connector
- ☐ Coolant temperature sender at radiator outlet - G83-
- ☐ 2-pin connector

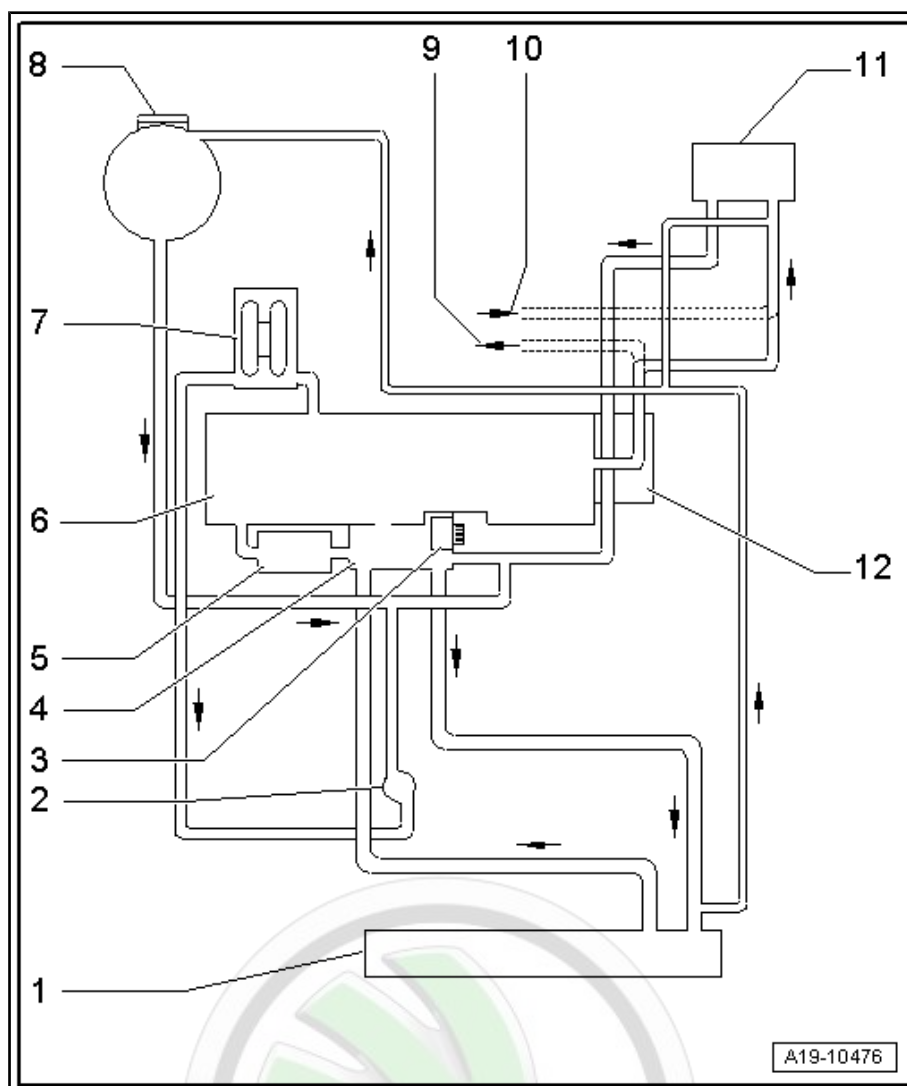




1.2 Connection diagram for coolant hoses

For vehicles with a manual gearbox

- 1 - Radiator
- 2 - coolant recirculation pump - V51-
- 3 - Coolant pump
- 4 - Coolant regulator
- 5 - Engine oil cooler
- 6 - Cylinder head and cylinder block
- 7 - Exhaust gas turbocharger
- 8 - expansion reservoir
- 9 - to auxiliary heating
- 10 - from the auxiliary heating
- 11 - Heat exchanger
- 12 - Coolant connector

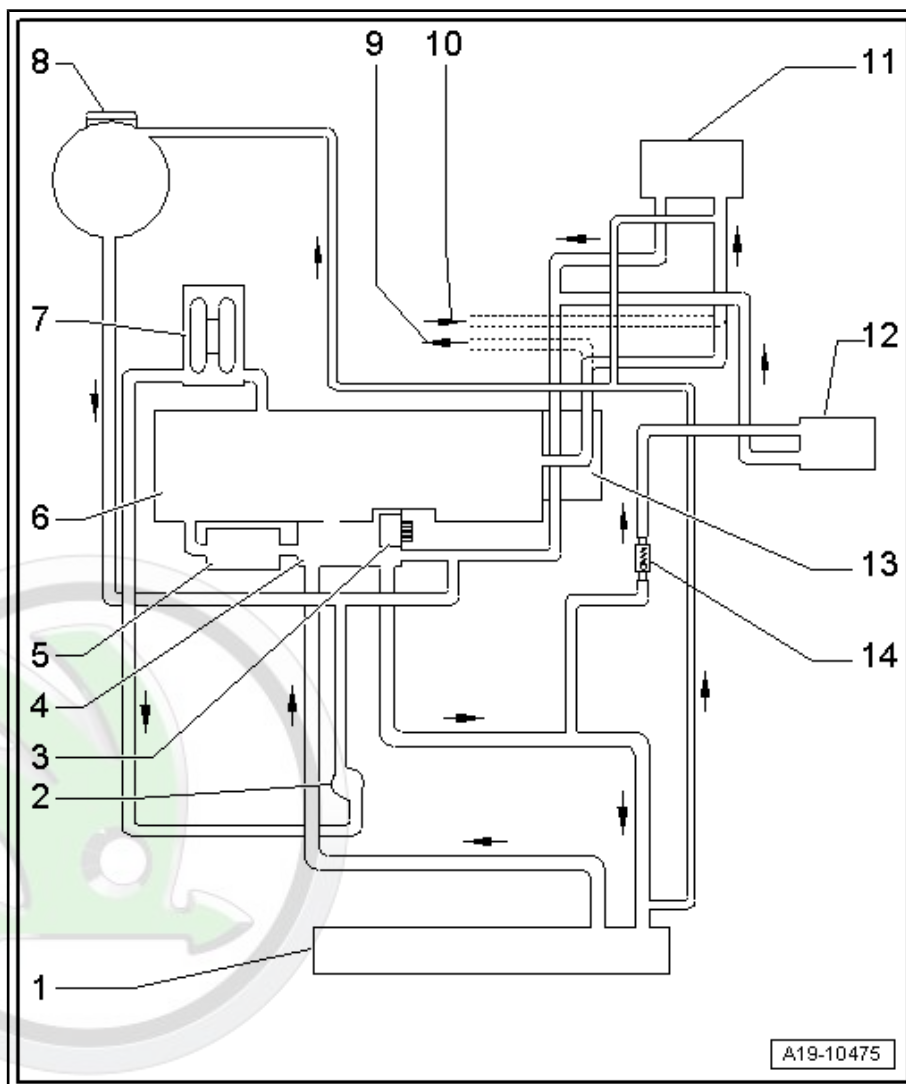


For vehicles with automatic gearbox

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- 1 - Radiator
- 2 - coolant recirculation pump - V51-
- 3 - Coolant pump
- 4 - Coolant regulator
- 5 - Engine oil cooler
- 6 - Cylinder head and cylinder block
- 7 - Exhaust gas turbocharger
- 8 - expansion reservoir
- 9 - to auxiliary heating
- 10 - from the auxiliary heating
- 11 - Heat exchanger
- 12 - Gearbox oil cooler
- 13 - Coolant connector
- 14 - Regulators for gearbox oil coolers



1.3 Draining and filling coolant

Special tools and workshop equipment required

- ◆ Catch pan , e.g. -VAS 6208-

- ◆ Pliers for spring-type clips

- ◆ Refractometer

Draining



Note

The drained coolant must not be re-used.

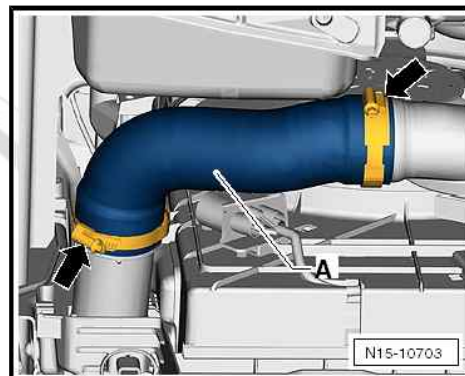
- ◆ Collect and dispose of drained coolant in a clean container.
- ◆ Observe the disposal instructions.



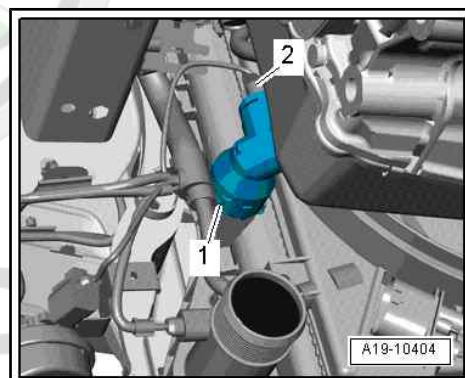
⚠ CAUTION

Hot steam may escape when the coolant expansion reservoir is opened. Wear safety goggles and safety clothing to avoid eye injuries and scalding. Cover the cap with a cloth and open carefully.

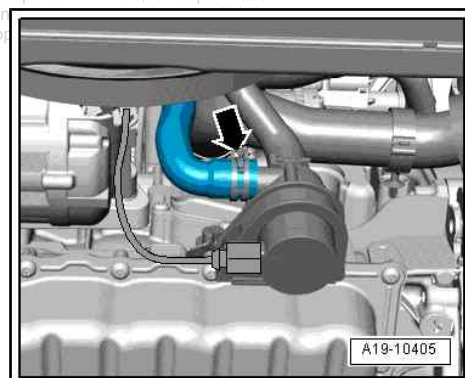
- Open the screw cap of the expansion reservoir.
- Remove noise insulation ⇒ Body Work ⇒ Rep. gr. 50 .
- Place a catch pan under the radiator.
- Open clamps -arrows- and remove charge air hose -A-.



- Remove supports for coolant -1- below from the cooler and allow the coolant to drain.



- Remove bottom coolant hose -arrow- for the coolant recirculation pump - V51- and allow the coolant to drain.



Vehicles with auxiliary heating

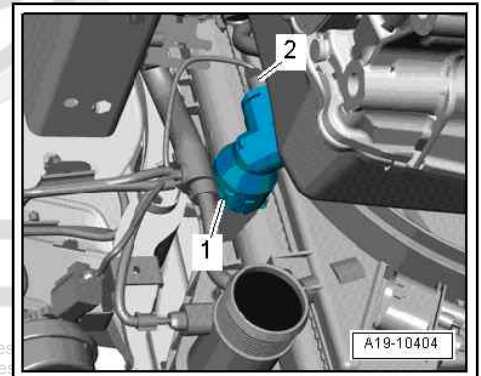
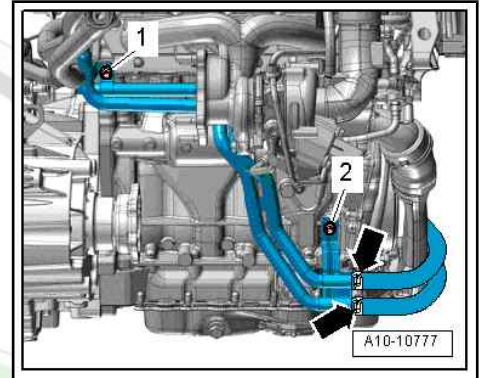
- Remove the coolant hoses -arrows- and allow the remaining coolant to drain.

Filling up

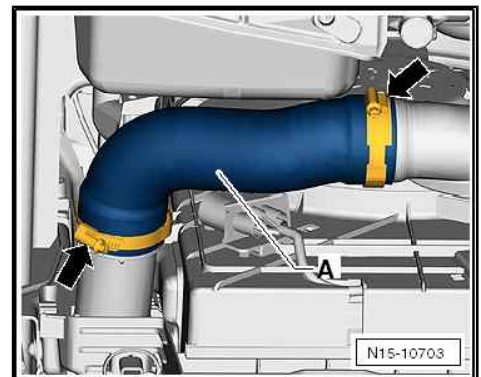
Select the appropriate coolant additive from the ⇒ ETKA - Electronic catalogue of original parts .

- In a clean reservoir, mix distilled water and anti-freeze in the specified mixing ratio ⇒ Maintenance ; Booklet Octavia II/Superb II/Yeti .

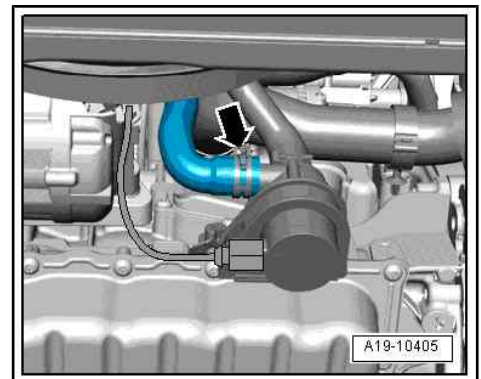
- Install the bottom support for coolant -1- on the cooler.



- Install the charge air hose -A- and secure with clamps -arrows-.



- Fit the bottom coolant hose -arrow- onto the coolant recirculation pump -V51- and secure with a spring-type clip.

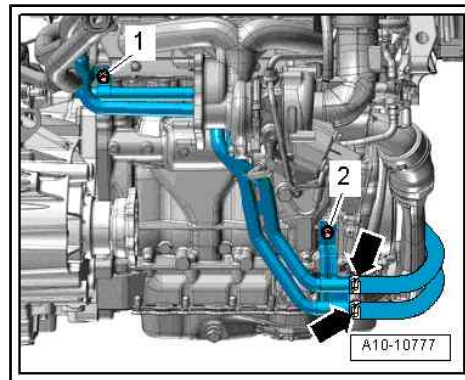


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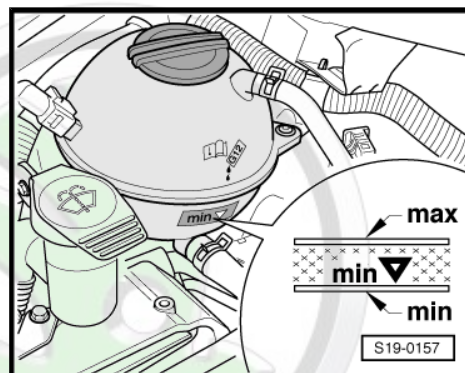
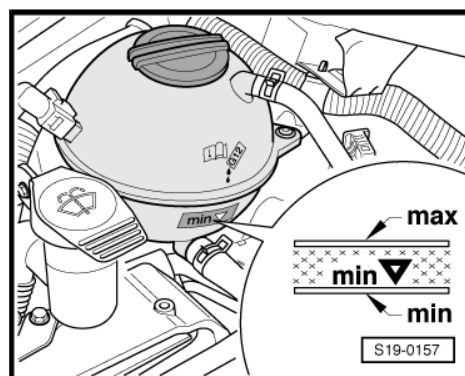
Vehicles with auxiliary heating

- Put the coolant hoses -arrows- and secure with spring-type clips.



Continued for all vehicles

- Fill up new coolant slowly up to the top marking of the criss-crossed field (max.) on the expansion reservoir.
- Seal expansion reservoir.
- Switch off the heater unit and air conditioning unit.
- Start the engine and maintain the engine speed for about 3 minutes at approx. 2000 r.p.m.
- Run engine until radiator fan - V7- starts.
- Check coolant level when the expansion reservoir is closed.
- When engine is at operating temperature the coolant level must be at the max. marking, when engine is cold in the middle between the min. and the max. marking.



CAUTION

Hot steam may escape when the expansion reservoir is opened. Wear safety goggles and safety clothing to avoid eye injuries and scalding. Cover the cap with a cloth and open carefully.

- Top up with coolant if necessary. The old (drained) coolant may not be reused.

1.4 Check cooling system for leaks

⇒ [“1.4.1 Inspecting coolant system for leaktightness, with cooling system testing device V.A.G 1274 ”, page 182](#)

⇒ [“1.4.2 Inspecting coolant system for leaktightness, with cooling system testing device V.A.G 1274 B ”, page 183](#)

1.4.1 Inspecting coolant system for leaktightness, with cooling system testing device - V.A.G 1274-

Special tools and workshop equipment required

- ♦ Cooling system testing device , e.g. -V.A.G 1274-
- ♦ Adapter for cooling system testing device , e.g. -V.A.G 1274/8-
- ♦ Adapter for cooling system testing device , e.g. -V.A.G 1274/9-

Test condition

- Engine must be warm.

Check cooling system for leaks

CAUTION

Hot steam may escape when the expansion reservoir is opened.

- ◆ Wear safety goggles and safety clothing to avoid eye injuries and scalding.
- ◆ Cover the cap with a cloth and open carefully.

- Open compensation bottle.
- Position the cooling system testing device - V.A.G 1274- with adapter - V.A.G 1274/8- on the coolant expansion reservoir.
- Using the hand pump of the testing device, generate an over-pressure of approx. 0.15 MPa (1.5 bar).
- The pressure must not drop below 0.02 MPa (0.2 bar) after 10 minutes.

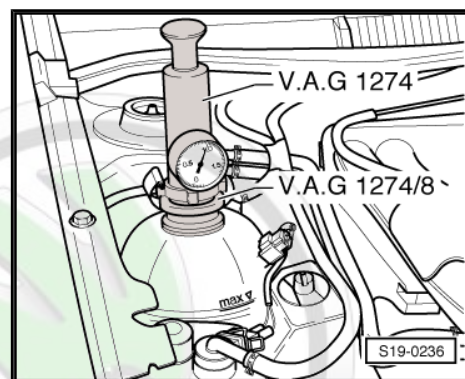
If the pressure falls below 0.02 MPa (0.2 bar):

- Search position of the leak and repair fault.



Note

- ◆ A fall in pressure of 0.02 MPa (0.2 bar) within 10 minutes is caused by cooling of the coolant.
- ◆ The colder the engine, the lower the pressure loss.



Testing the pressure relief valve in the cap

- Screw the screw cap into the adapter for cooling system testing device - V.A.G 1274/9- .
- Build up overpressure using hand pump on cooling system testing device - V.A.G 1274- .

Blue filler cap

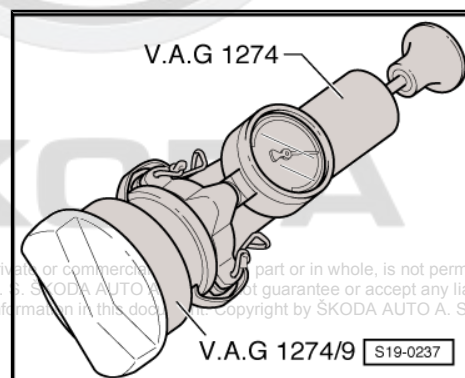
- ◆ The pressure relief valve must open at a pressure of 0.14 ... 0.16 MPa (1.4 ... 1.6 bar).

Black filler cap

- ◆ The pressure relief valve must open at a pressure of 0.16 ... 0.18 MPa (1.6 ... 1.8 bar).

If the pressure relief valve opens too early or too late:

- Renew cap.



1.4.2 Inspecting coolant system for leaktightness, with cooling system testing device - V.A.G 1274 B-

Special tools and workshop equipment required

- ◆ Cooling system testing device , e.g. -V.A.G 1274 B-
- ◆ Adapter for cooling system testing device , e.g. -V.A.G 1274/8-
- ◆ Adapter for cooling system testing device , e.g. -V.A.G 1274/9-



Note

To ensure that the leaktightness test can be carried out correctly, first carry out the test (self-test) of the cooling system testing device - V.A.G 1274 B- .

Test (self-test) of the cooling system testing device - V.A.G 1274 B-

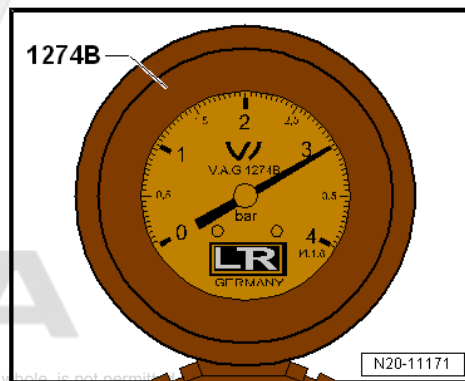
- Use the cooling system testing device - V.A.G 1274 B- to build up the pressure to 0.3 MPa (3.0 bar).
- Monitor the pressure on the pressure manometer of the cooling system testing device - V.A.G 1274 B- 30 seconds long.

Pressure is not established or the pressure drops:

The cooling system testing device - V.A.G 1274 B- is not OK and cannot be used for the test.

Pressure is built up and does not drop:

The cooling system testing device - V.A.G 1274 B- is OK and can be used for the test.



Check cooling system for leaks

- Engine must be warm.



CAUTION

Hot steam may escape when the expansion reservoir is opened.

- ◆ Wear safety goggles and safety clothing to avoid eye injuries and scalding.
- ◆ Cover the cap with a cloth and open carefully.

- Open compensation bottle.

- Screw the adapter for cooling system testing device - V.A.G 1274/8- into the coolant expansion bottle.
- Clamp the connecting piece - V.A.G 1274 B/1- in the adapter for cooling system testing device - V.A.G 1274/8- .
- Connect the connecting piece - V.A.G 1274 B/1- to the cooling system testing device - V.A.G 1274 B- via the supplied connecting hose.
- Using the hand pump of the testing device generate an over-pressure of approx. 0.15 MPa (1.5 bar).
- The pressure must not drop below 0.02 MPa (0.2 bar) after 10 minutes.

If the pressure falls below 0.02 MPa (0.2 bar):

- Search position of the leak and repair fault.



Note

- ◆ A fall in pressure of 0.02 MPa (0.2 bar) within 10 minutes is caused by cooling of the coolant.
- ◆ The colder the engine, the lower the pressure loss.



CAUTION

Risk of scalding!

- ◆ Before the cooling system testing device - V.A.G 1274 B- is separated from the connecting hose or the connecting piece - V.A.G 1274 B/1- , the existing pressure must absolutely be released.
- ◆ For this step, press the pressure relief valve on the cooling system testing device - V.A.G 1274 B- until the pressure gauge indicates the value »0«.

Testing the pressure relief valve in the cap

- Screw the screw cap into the adapter for cooling system testing device - V.A.G 1274/9- .
- Clamp the connecting piece - V.A.G 1274 B/1- in the adapter for cooling system testing device - V.A.G 1274/9- .
- Connect the connecting piece - V.A.G 1274 B/1- to the cooling system testing device - V.A.G 1274 B- via the supplied connecting hose.
- Build up overpressure using hand pump on cooling system testing device - V.A.G 1274 B- .

Blue filler cap

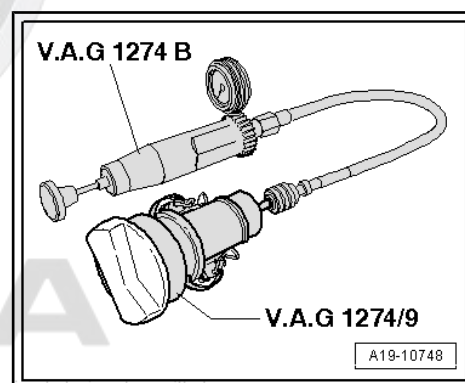
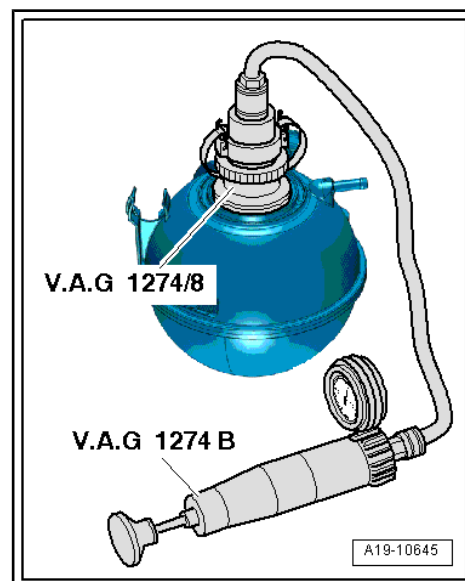
- ◆ The pressure relief valve must open at a pressure of 0.14 ... 0.16 MPa (1.4 ... 1.6 bar).

Black filler cap

- ◆ The pressure relief valve must open at a pressure of 0.16 ... 0.18 MPa (1.6 ... 1.8 bar).

If the pressure relief valve opens too early or too late:

- Renew cap.





2 Coolant pump, regulation of cooling system

⇒ [“2.1 Summary of components - coolant pump/thermostat”, page 186](#)

⇒ [“2.2 Summary of components - Coolant recirculation pump V51”, page 189](#)

⇒ [“2.3 Removing and installing coolant recirculation pump V51”, page 189](#)

⇒ [“2.4 Removing and installing coolant pump”, page 190](#)

⇒ [“2.5 Removing and installing toothed belt for coolant pump”, page 191](#)

⇒ [“2.6 Removing and installing coolant temperature transmitter G62”, page 195](#)

⇒ [“2.7 Replace radial shaft seal for coolant pump drive”, page 196](#)

⇒ [“2.8 Removing and installing coolant regulator”, page 197](#)

2.1 Summary of components - coolant pump/thermostat

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Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

1 - Screw

- ☐ Tightening torque and tightening order
⇒ [Fig. "Coolant pump-tightening sequence", page 188](#)

2 - O-rings

- ☐ replace

3 - Connecting studs

4 - Retaining clip

- ☐ only in connected version
- ☐ check correct fitting

5 - Screw

- ☐ only in an screwed-on version
- ☐ 4 Nm

6 - Retaining plate

- ☐ only in an screwed-on version

7 - Coolant temperature transmitter - G62-

- ☐ Replace
⇒ ["2.6 Removing and installing coolant temperature transmitter G62", page 195](#)

8 - O-ring

- ☐ replace

9 - Coolant pump

- ☐ Removing and installing
⇒ ["2.4 Removing and installing coolant pump", page 190](#)
- ☐ Remove the protective cap on the new coolant pump

10 - Seal

- ☐ replace

11 - Centring bolts

- ☐ 2 units

12 - Toothed belt for coolant pump

- ☐ Removing and installing ⇒ ["2.5 Removing and installing toothed belt for coolant pump", page 191](#)

13 - Toothed belt guard

14 - Screw

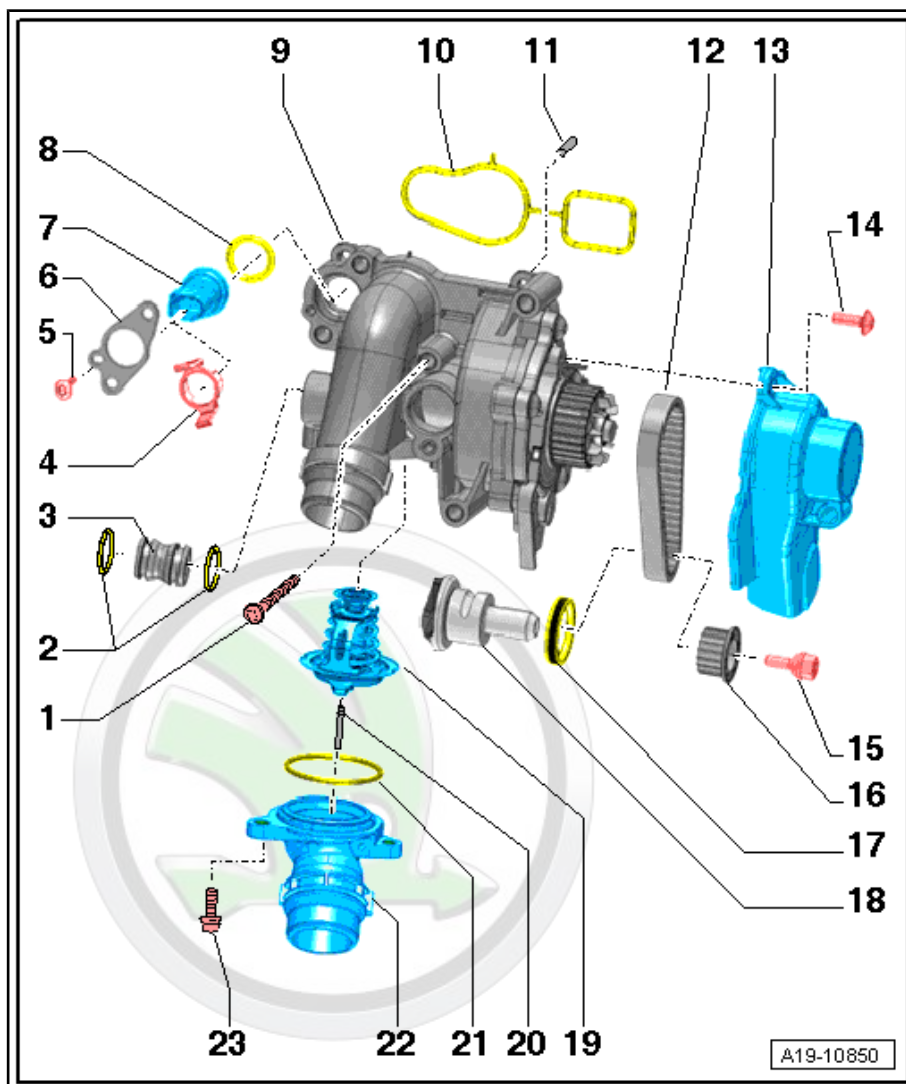
- ☐ 9 Nm

15 - Screw

- ☐ Replace after disassembly
- ☐ Left-hand thread
- ☐ 10 Nm + 90°

16 - Drive wheel for timing belt

- ☐ Check fitting position



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17 - Radial shaft seal

- ☐ Replace ⇒ [“2.7 Replace radial shaft seal for coolant pump drive”, page 196](#)

18 - Balancing shaft

19 - Coolant regulator

- ☐ Removing and installing ⇒ [“2.8 Removing and installing coolant regulator”, page 197](#)
- ☐ Coolant regulator can be inspected via the “Targeted fault finding” under “Selected Functions/Components” ⇒ Vehicle diagnostic tester
- ☐ Opening start for coolant regulator: approx. 87°C
- ☐ Opening end for coolant regulator: approx. 105°C
- ☐ Opening stroke: approx. 8 mm

20 - Dowel pin

21 - O-ring

- ☐ replace

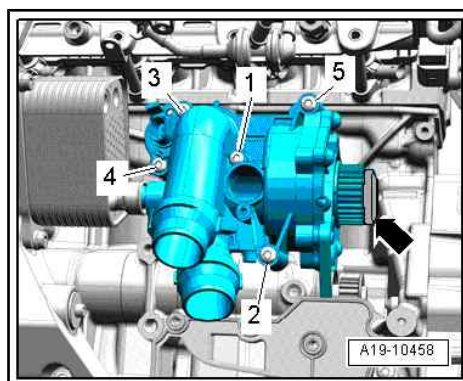
22 - Connection fitting

23 - Screw

- ☐ 9 Nm

Coolant pump- tightening sequence

- Tighten screws -1- to -5- in the sequence to 9 Nm according to the figure.

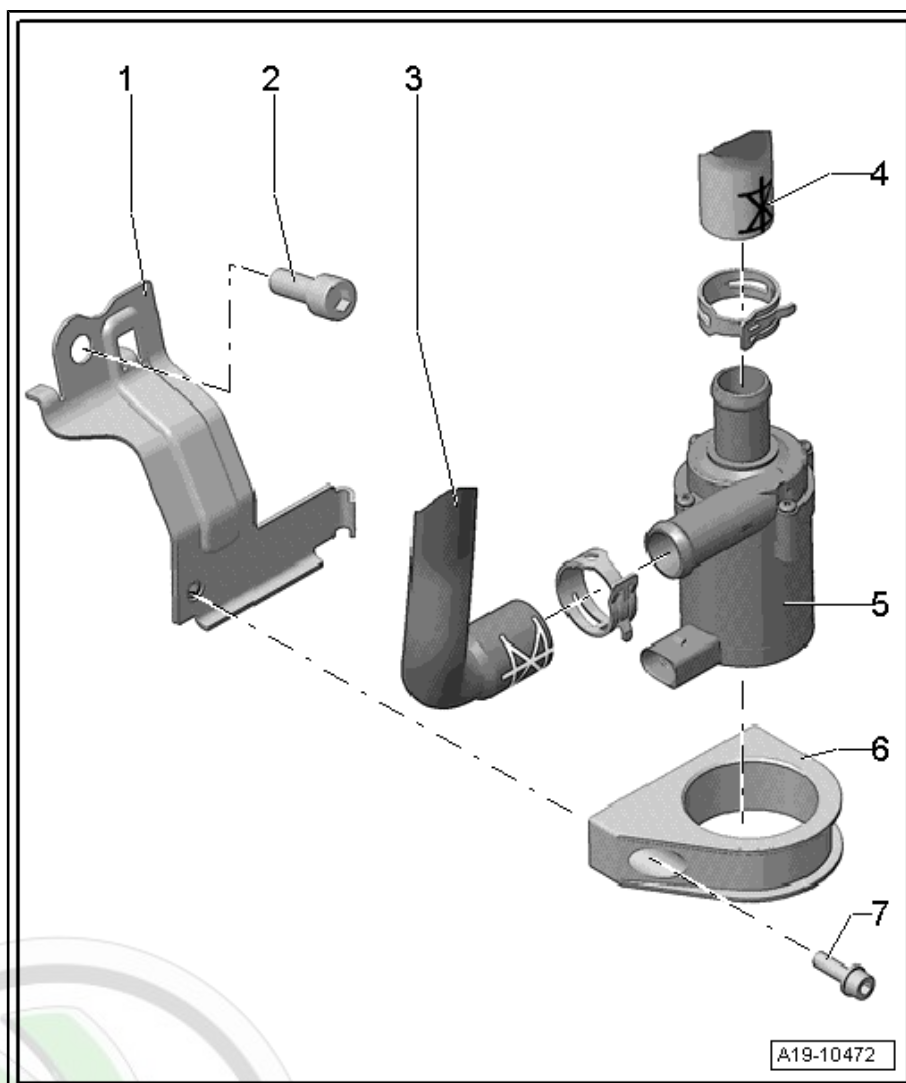


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2.2 Summary of components - Coolant recirculation pump - V51-

- 1 - Mounting bracket
- 2 - Screw
□ 40 Nm
- 3 - Coolant hose
- 4 - Coolant hose
- 5 - coolant recirculation pump - V51-
- 6 - Mounting bracket
- 7 - Screw
□ 8 Nm



2.3 Removing and installing coolant recirculation pump - V51-

Special tools and workshop equipment required

- ◆ Hose clamp - MP7-602 (3094)-
- ◆ Pliers for spring-type clips
- ◆ Catch pan , e.g. -VAS 6208-

Removing

CAUTION

Hot steam may escape when the coolant expansion reservoir is opened. Wear safety goggles and safety clothing to avoid eye injuries and scalding. Cover the cap with a cloth and open carefully.

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- Open the screw cap of the expansion reservoir
- Remove noise insulation ⇒ Body Work ⇒ Rep. gr. 50 .



- Detach the connectors -1- from the coolant recirculation pump - V51- .
- Place a catch pan under the engine.
- Remove the coolant hoses -arrows- with hose clamp - MP7-602 (3094)- .
- Detach the coolant hoses from the coolant recirculation pump - V51- .
- Release screw -2- and remove coolant recirculation pump - V51- .

Installing

The installation occurs in reverse order. However, pay attention to the following:

- Top up with coolant
⇒ ["1.3 Draining and filling coolant", page 179](#) .

Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ♦ Coolant recirculation pump - V51-
⇒ ["2.2 Summary of components - Coolant recirculation pump V51", page 189](#) .

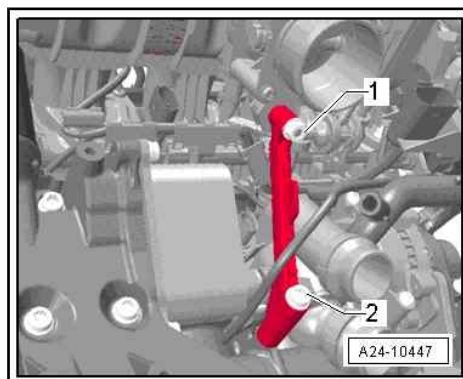
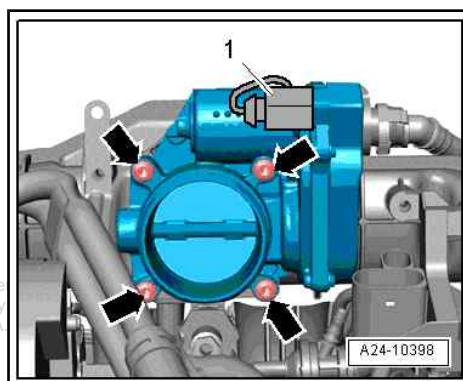
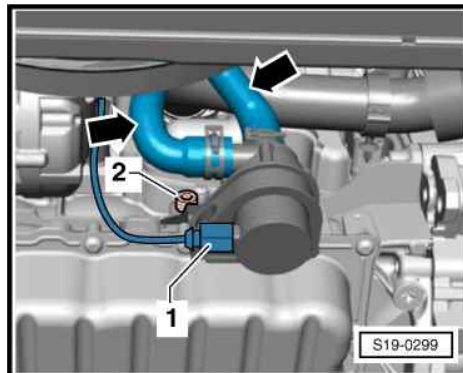
2.4 Removing and installing coolant pump

Removing

- Remove toothed belt for coolant pump
⇒ ["2.5 Removing and installing toothed belt for coolant pump", page 191](#) .
- Disconnect the plug -1- from the throttle valve control unit - J338- .
- Release screws -arrows- and remove throttle valve control unit - J338- .
- Remove coolant temperature sensor - G62-
⇒ ["2.6 Removing and installing coolant temperature transmitter G62", page 195](#) .

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- Unscrew the nuts -1-, unscrew the screw -2- and remove the intake manifold support.
- Unscrew rubber bearing for intake manifold support (5 nm).



- Unscrew the screws -1- to -5-.
- Take the coolant pump from the centering bolt and remove from the engine oil cooler.

Installing

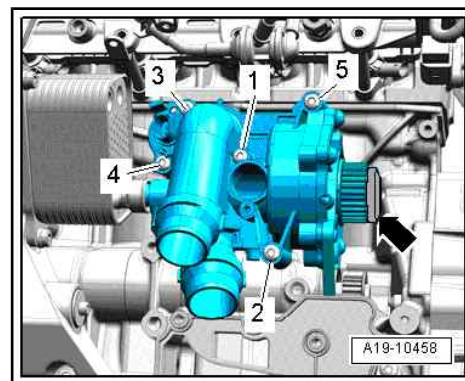
The installation occurs in reverse order. However, pay attention to the following:



Note

Replace gaskets and O-rings.

- Moisten O-rings -4- with coolant.
- Check whether both centring pins are used in the cylinder block, insert if necessary.
- Insert connecting piece -2- into the engine oil cooler-1-.
- Position coolant pump -3- to the connecting stud, and slide the centering bolts in the cylinder block.



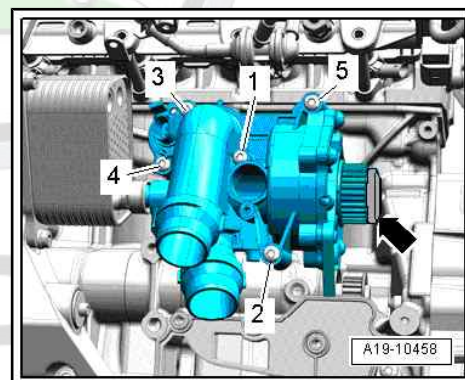
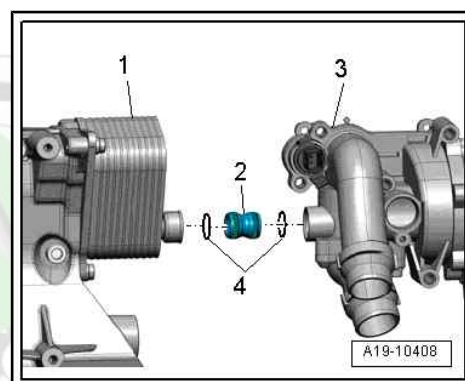
- Tighten screws -1- to -5-
⇒ [Fig. “Coolant pump- tightening sequence”](#), page 188 .



Note

When installing a new coolant pump, remove the protective cap -arrow-.

- Install toothed belt for coolant pump
⇒ [“2.5 Removing and installing toothed belt for coolant pump”](#), page 191 .



Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Coolant pump
⇒ [“2.1 Summary of components - coolant pump/thermostat”](#), page 186 .
- ◆ Intake manifold support
⇒ [“2.1 Assembly overview - intake manifold”](#), page 289 .

2.5 Removing and installing toothed belt for coolant pump

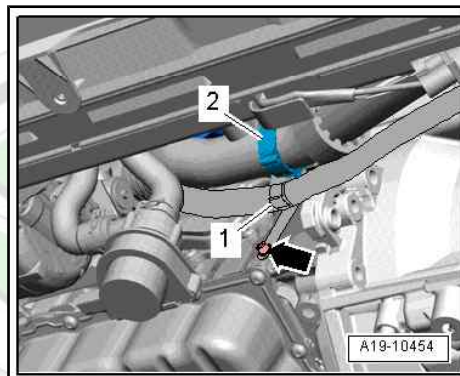
Special tools and workshop equipment required

- ◆ Assembly tool - T10360-
- ◆ Torque wrench - V.A.G 1410-

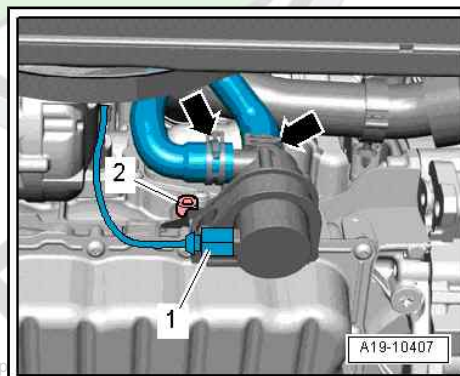


Removing

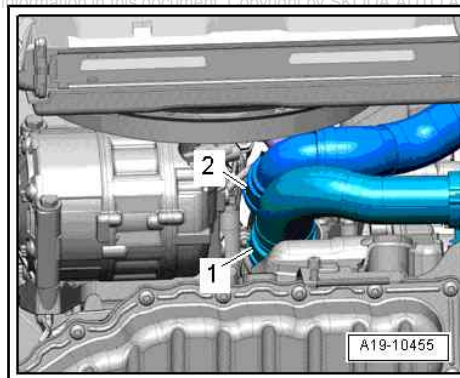
- Remove the small coolant pipe
⇒ [“3.3 Removing and installing small coolant pump”, page 205](#) .
- Undo the coolant hose -2- and wiring harness -1-.
- Unscrew the screw -arrow- and remove the mounting bracket.



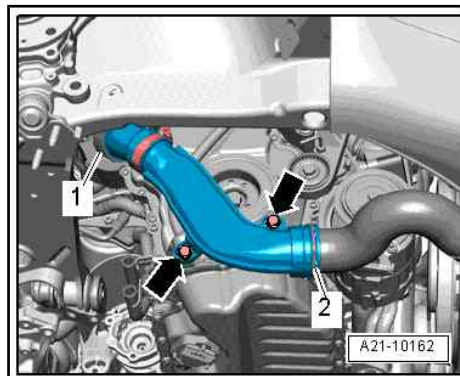
- Unscrew the bolt -2- at the mounting bracket of the coolant recirculation pump - V51- .



- Remove the coolant hoses -1- and -2- and place them to one side.
- Remove the front right wheelhouse liner ⇒ Body Work; Rep. gr. 66 .



- Remove screws -arrows-.
- Remove charge-air pipe. To do so, remove the terminals -1- and -2-.

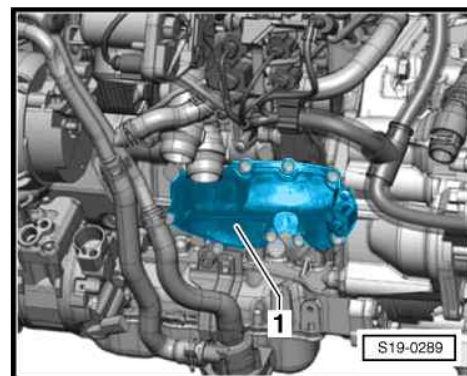


- Unscrew the oil trap -1-.



Risk of contamination of the lubrication system.

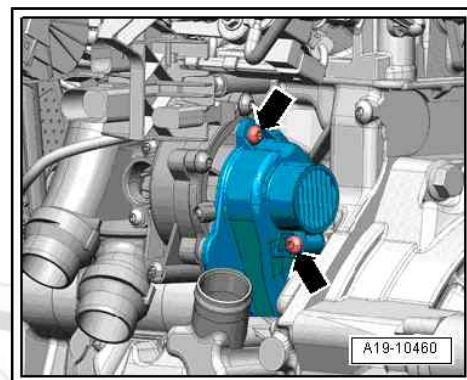
- ◆ Cover the oil opening with a clean cloth.



- Unscrew the screws -arrows- and remove the toothed belt guard.



The screw at the drive wheel has a left-hand thread.



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- Unscrew the screw -1- from the drive wheel of the coolant pump using the assembly tool - T10360- in a clockwise direction. To do so, hold it in place with the Polydrive socket SW 24 on the vibration damper.
- Remove drive gear -1- and toothed belt -2-.

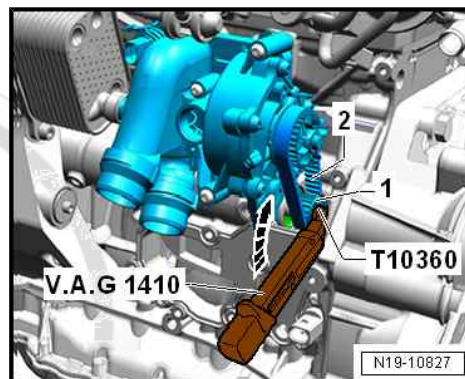
Installing

The installation occurs in reverse order. However, pay attention to the following:



Note

- ◆ Replace the screw for the drive gear.
- ◆ Observe the fitting position of the toothed belt
⇒ [“2.1 Summary of components - coolant pump/thermostat”, page 186](#).
- ◆ Replace gaskets and O-rings.
- Install the oil trap
⇒ [“1.1 Assembly overview - pan/oil pump”, page 156](#).
- Install pump for coolant recirculation - V51-
⇒ [“2.3 Removing and installing coolant recirculation pump V51”, page 189](#).
- Install the small coolant pipe
⇒ [“3.3 Removing and installing small coolant pump”, page 205](#).



Tightening torques - summaries of components



Note

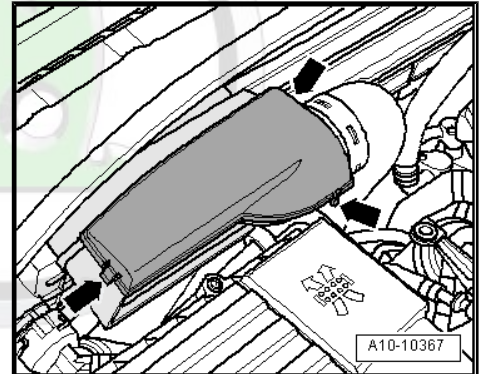
Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Coolant recirculation pump - V51-
⇒ [“2.2 Summary of components - Coolant recirculation pump V51”, page 189](#).
- ◆ Charge air pipe
⇒ [“2.1 Summary of components - charge air cooler”, page 274](#).
- ◆ Oil separator
⇒ [“1.1 Assembly overview - pan/oil pump”, page 156](#).
- ◆ Summary of components of coolant pump
⇒ [“2.1 Summary of components - coolant pump/thermostat”, page 186](#).

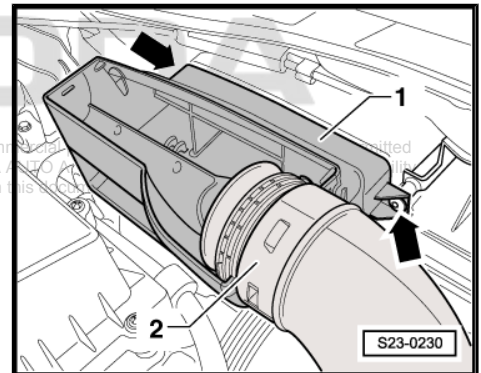
2.6 Removing and installing coolant temperature transmitter - G62-

Removing

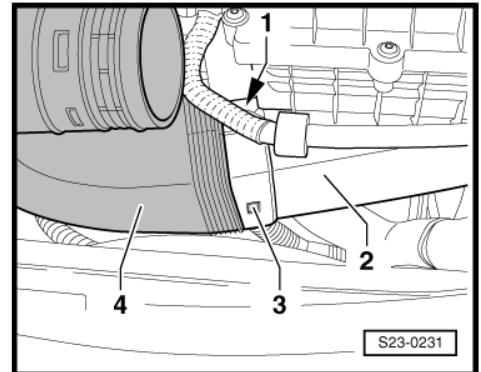
- Remove cover for connection fitting, to do so release lateral retaining clasps -arrows-.



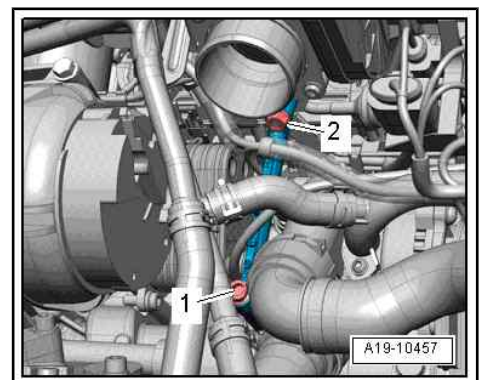
- Release screws -arrows- for connection fitting -1- and take connecting hose -2- out of the guide.



- Press in catches -1- and -3- and pull off connecting hose -4- from air filter -2-.
- Remove the throttle valve control unit - J338-
⇒ ["2.7 Removing and installing the throttle valve control unit J338", page 304](#) .



- Remove supports for intake manifold. To do so, remove nuts -2- with screw -1-.





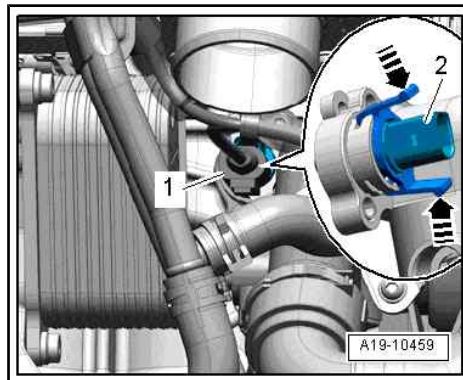
Coolant temperature sensor - G62- with clamp

- Disconnect plug -1- at the coolant temperature sender - G62- .
- Remove the holding clamps. To do so, press the locking mechanisms -arrows-.
- Remove the coolant temperature sender - G62- -2-.



Note

To prevent losing too much coolant, insert the new coolant temperature sender - G62- with O-ring into the connection fitting right away.



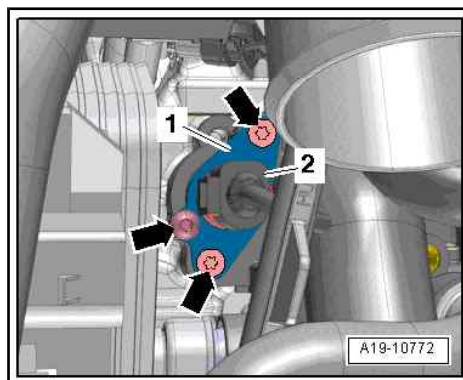
Coolant temperature sensor - G62- with retaining plate

- Disconnect plug -2- at the coolant temperature sender - G62- .
- Remove screws -arrows- and remove the retaining plate-1-.
- Remove the coolant temperature sender - G62- .



Note

To prevent losing too much coolant, insert the new coolant temperature sender - G62- with O-ring into the connection fitting right away.



Installing

Assembly is carried out in the reverse order. When installing, observe the following:



Note

Renew O-ring.

- ♦ Tightening torques for support of intake manifold and throttle valve control unit - J338- :
⇒ ["2.1 Assembly overview - intake manifold", page 289](#) .
- After completing the work, check the coolant level ⇒ Maintenance ; Booklet Octavia II/Superb II/Yeti .

Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ♦ Intake manifold support
⇒ ["2.1 Assembly overview - intake manifold", page 289](#) .
- ♦ Coolant temperature sender - G62-
⇒ ["2.1 Summary of components - coolant pump/thermostat", page 186](#) .

2.7 Replace radial shaft seal for coolant pump drive

Special tools and workshop equipment required

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- ◆ Thrust piece - T10353-
- ◆ Cleaning and degreasing agent , e.g. -D 009 401 04-

Work procedure

- Remove toothed belt for coolant pump
⇒ ["2.5 Removing and installing toothed belt for coolant pump", page 191](#) .
- Press the screwdriver -1- firmly onto the surface -2- of the sealing ring arrow -B-.
- Lever out the sealing ring arrow -A-.

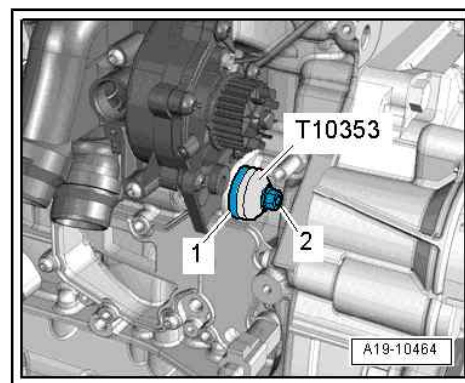
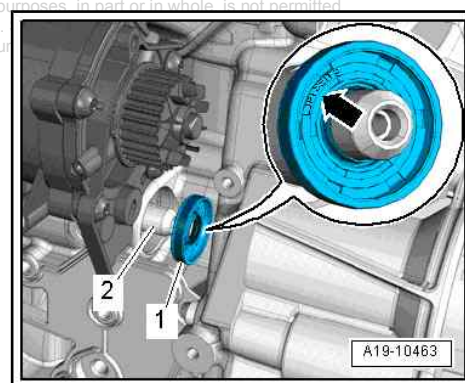
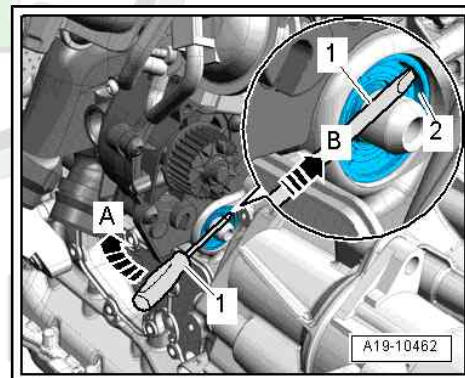
CAUTION

Wear protective gloves when working with sealant and grease remover!

- Clean the balancing shaft and seat of the sealing ring carefully. They must be free of oil and grease.

- Slide the seal -1- onto the balancing shaft.
- The label "air side" or ("Outside") -arrow- must be legible from the top.

- Fit thrust piece - T10353- to the gasket ring -1- and press in with screw -2- as far as it goes - do not tilt the gasket ring while doing so.
- Install toothed belt for coolant pump
⇒ ["2.5 Removing and installing toothed belt for coolant pump", page 191](#) .



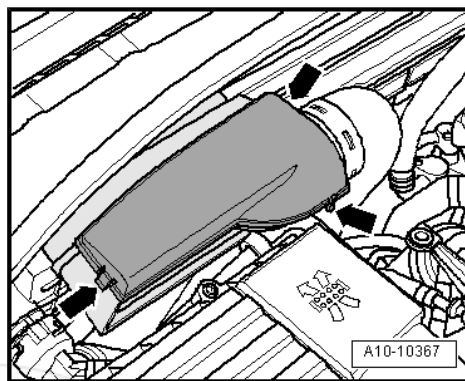
2.8 Removing and installing coolant regulator

Removing

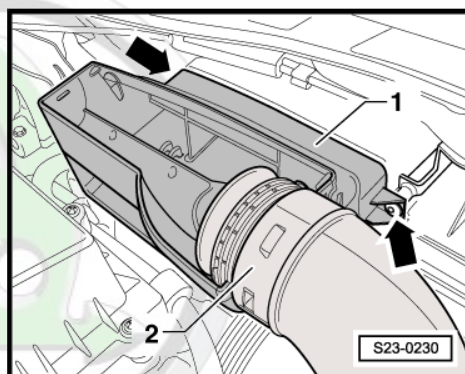
- Drain coolant ⇒ ["1.3 Draining and filling coolant", page 179](#) .



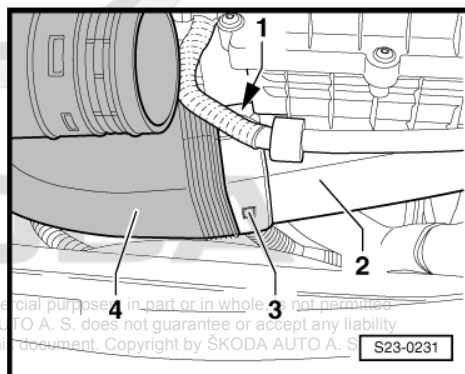
- Remove cover for connection fitting, to do so release lateral retaining clasps -arrows-.



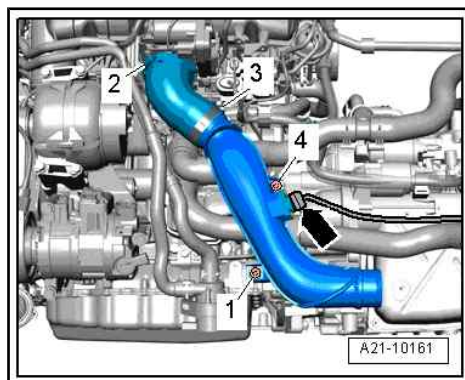
- Release screws -arrows- for connection fitting -1- and take connecting hose -2- out of the guide.



- Press in catches -1- and -3- and pull off connecting hose -4- from air filter -2-.

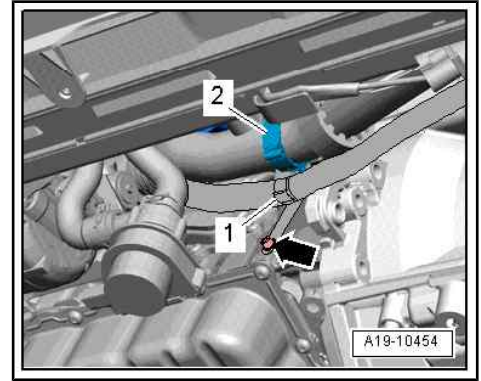


- Loosen clamp -2-.
- Disconnect the connector -arrow- from the charge pressure sender - G31- .
- Unscrews the screws -1- and -4- and remove the charge-air pipe with the hose downwards.



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- Undo the coolant hose -2- and wiring harness -1-.
- Unscrew the screw -arrow- and remove the mounting bracket.

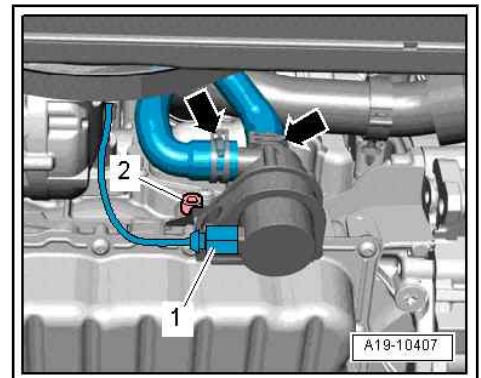


- Unscrew the bolt -2- at the mounting bracket of the coolant recirculation pump - V51- .

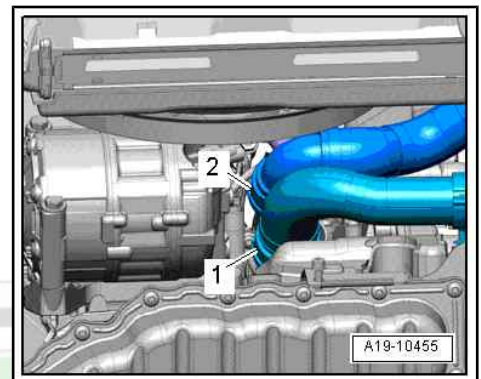


Note

The coolant recirculation pump - V51- remains in the fitting position.



- Remove the coolant hoses -1- and -2- and place them to one side.



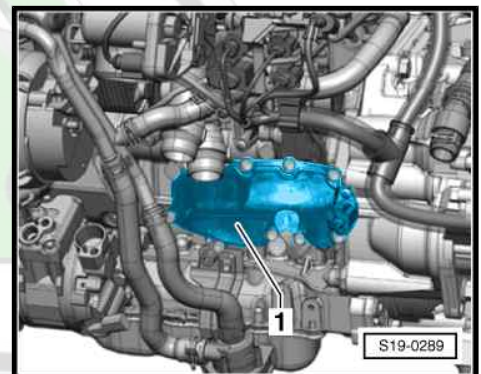
- Unscrew the oil trap -1-.



NOTICE

Risk of contamination of the lubrication system.

- ◆ Cover the oil opening with a clean cloth.

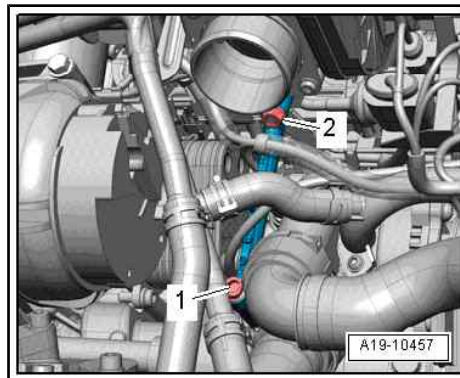


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- Undo nuts -2-, unscrew the screw -1- and slide supports for intake manifold to the right a little.



- Screw out screws -arrows- and remove connection fittings.
- Disconnect coolant regulator.

Installing

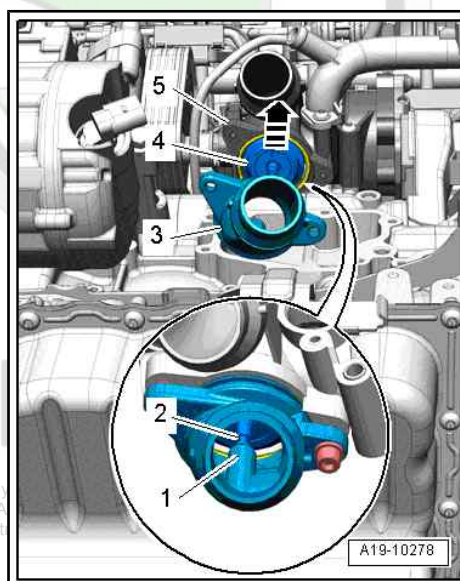
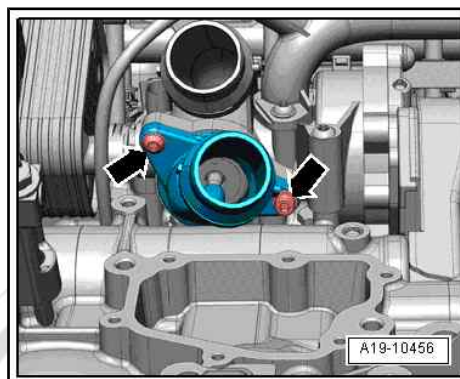
The installation occurs in reverse order. However, pay attention to the following:



Note

Replace gaskets and O-rings.

- Clean sealing surface for O-ring.
- Moisten O-ring with coolant.
- Insert the coolant regulator -4- into the housing -5- for coolant pump and slide them to the front a little -arrow-.
- Carefully fit the support -3-, insert the fitted pin -2- into the guide -1-.
- Screw on the connection fitting.

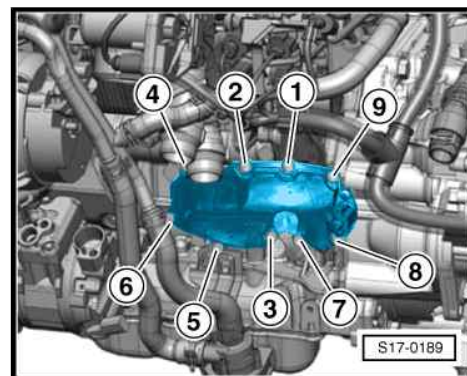


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- Replace the seal on the oil trap and tighten the screws to 9 Nm in the sequence -1- to -9-
⇒ [Fig. “Oil separator - tightening sequence”](#), page 159 .
- Install support for intake manifold
⇒ [“2.1 Assembly overview - intake manifold”](#), page 289 .
- Install pump for coolant recirculation - V51-
⇒ [“2.3 Removing and installing coolant recirculation pump V51”](#), page 189 .
- Top up coolant
⇒ [“1.3 Draining and filling coolant”](#), page 179 .

Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Charge air pipe
⇒ [“2.1 Summary of components - charge air cooler”](#), page 274 .
- ◆ Coolant recirculation pump - V51-
⇒ [“2.2 Summary of components - Coolant recirculation pump V51”](#), page 189 .
- ◆ Oil separator
⇒ [“1.1 Assembly overview - pan/oil pump”](#), page 156 .
- ◆ Intake manifold support
⇒ [“2.1 Assembly overview - intake manifold”](#), page 289 .
- ◆ Connection fitting
⇒ [“2.1 Summary of components - coolant pump/thermostat”](#), page 186 .



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3 Coolant pipes

⇒ ["3.1 Summary of components - coolant pipe", page 202](#)

⇒ ["3.2 Removing and installing the front coolant pipes", page 203](#)

⇒ ["3.3 Removing and installing small coolant pump", page 205](#)

3.1 Summary of components - coolant pipe



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

1 - Front coolant pipes

- ☐ Removing and installing
⇒ ["3.2 Removing and installing the front coolant pipes", page 203](#)

2 - Coolant hose

- ☐ from exhaust turbo-charger

3 - Coolant hose

- ☐ to the expansion reservoir

4 - Screw

- ☐ 5 Nm

5 - O-ring

- ☐ replace

6 - Coolant hose

- ☐ to heat exchanger

7 - Small coolant pipe

- ☐ Removing and installing
⇒ ["3.3 Removing and installing small coolant pump", page 205](#)

8 - Screw

- ☐ 9 Nm

9 - Coolant hose

10 - Screw

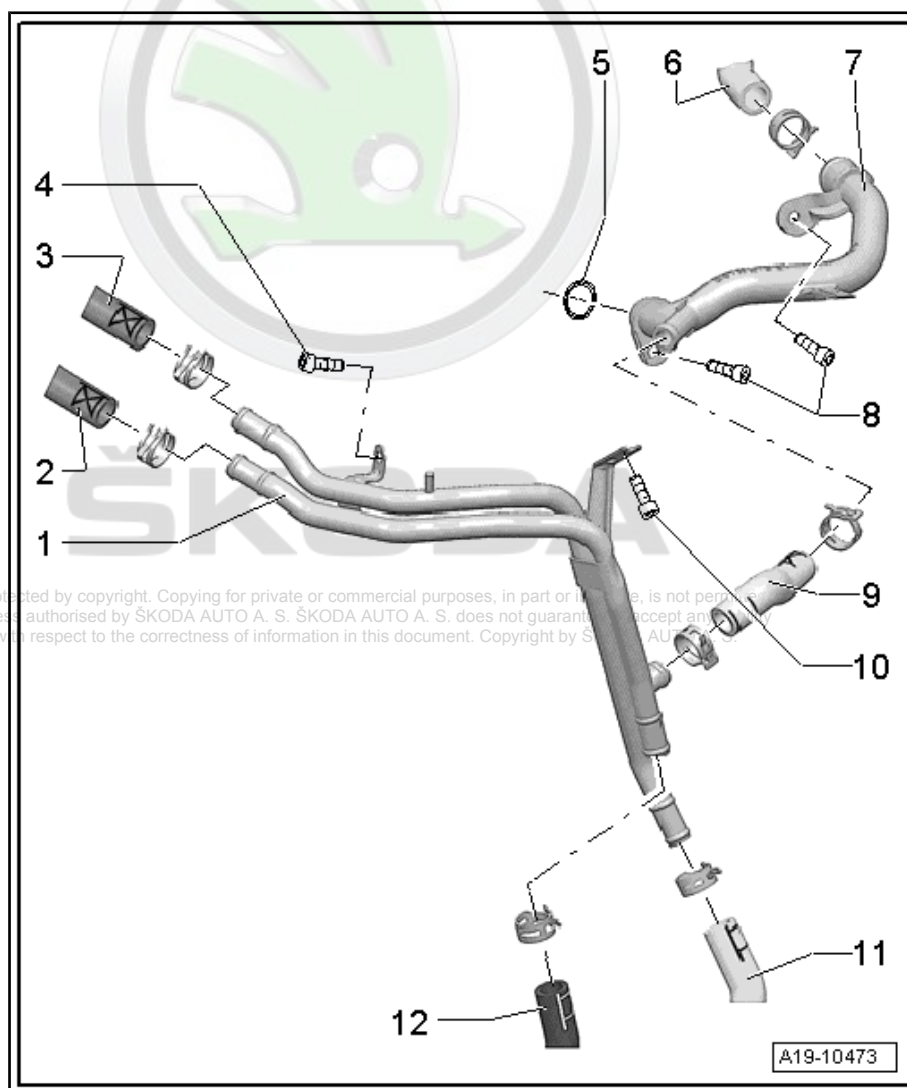
- ☐ 5 Nm

11 - Coolant hose

- ☐ from the pump for coolant recirculation pump - V51-

12 - Coolant hose

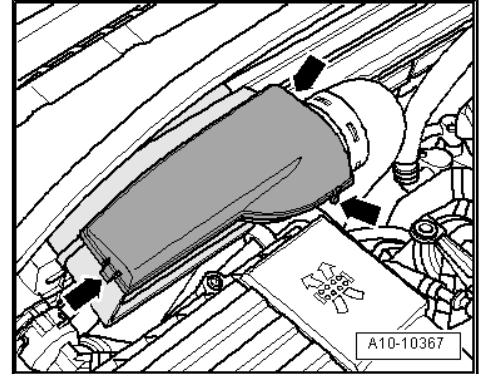
- ☐ to coolant recirculation pump - V51-



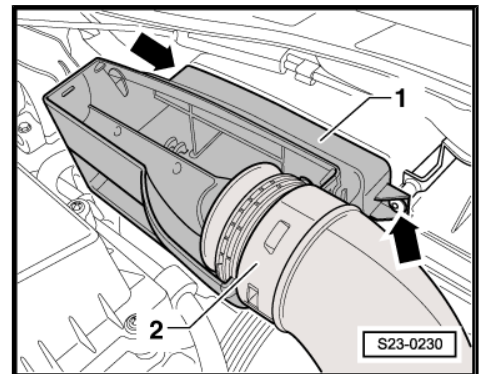
3.2 Removing and installing the front coolant pipes

Removing

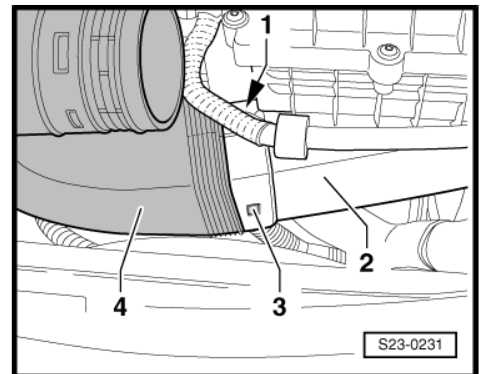
- Drain coolant ➔ [“1.3 Draining and filling coolant”, page 179](#) .
- Remove cover for connection fitting, to do so release lateral retaining clasps -arrows-.



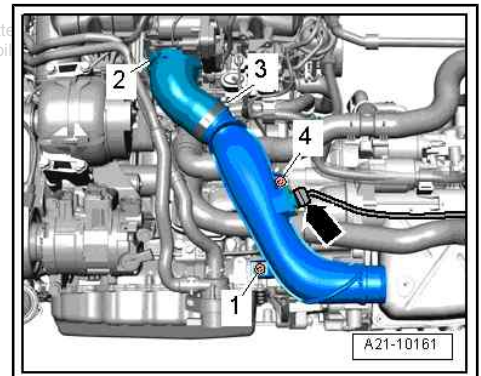
- Release screws -arrows- for inlet connection -1- and take connecting hose-2- out of the guide.



- Press in catches -1- and -3-, pull off connecting hose -4- from air filter -2-.



- Loosen clamp -2-.
- Disconnect the connector -arrow- from the charge pressure sender - G31- .
- Unscrews the screws -1- and -4- and remove the charge-air pipe with the hose downwards.

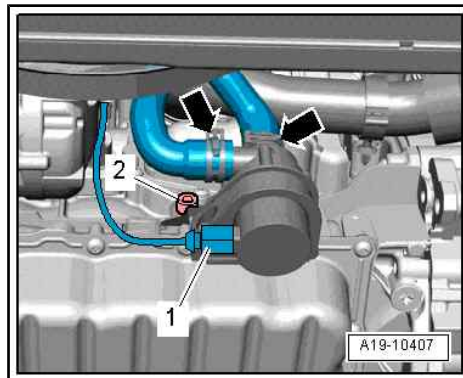




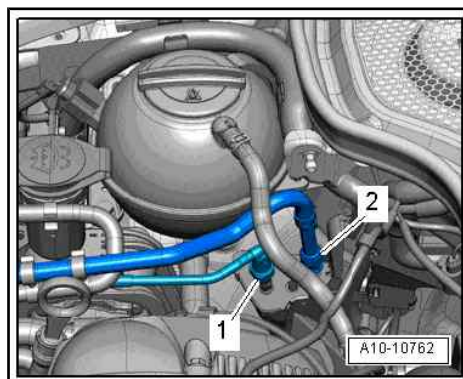
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Octavia II 2004 ➤ , Octavia II 2010 ➤ , Superb II 2008 ➤ , Superb II 20 ...
1.8/112; 118 kW; 2.0/147 kW TSI engine - Edition 06.2019

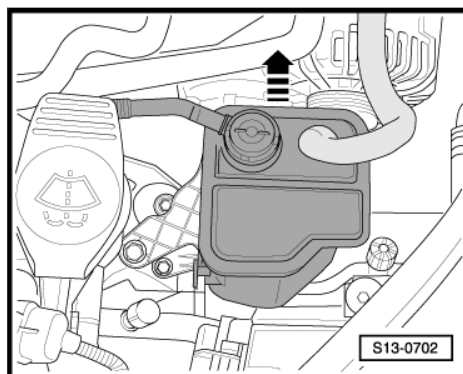
- Detach the coolant hoses from the coolant recirculation pump
- V51- -arrows-.



- Disconnect vent line -1-
⇒ ["1.3 Separating push-on couplings", page 215](#) .
- Unhook the vent pipe to the coolant pipes.
- Loosen the terminal on the rear side of the activated charcoal reservoir.



- Remove container with its connected hoses upwards from bracket -arrow- and lay to the side.



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- Unscrew screws -1- and -2- and remove the coolant pipes from the coolant hoses -arrows-.

Installing

The installation occurs in reverse order. However, pay attention to the following:

- Install air filter housing
⇒ [“3.2 Removing and installing air filter housing”, page 308](#) .
- Top up coolant
⇒ [“1.3 Draining and filling coolant”, page 179](#) .

Tightening torques - summaries of components



Note

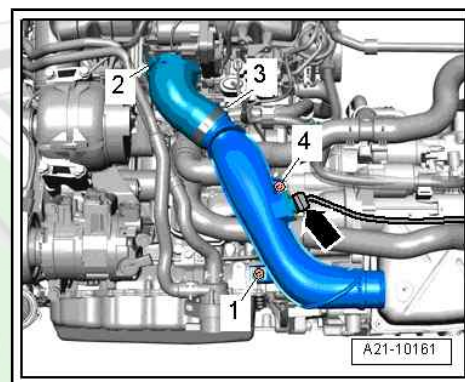
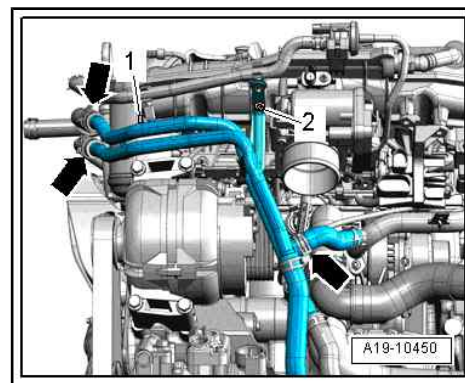
Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Coolant pipes
⇒ [“3.1 Summary of components - coolant pipe”, page 202](#) .
- ◆ Charge air pipe
⇒ [“2.1 Summary of components - charge air cooler”, page 274](#) .
- ◆ Coolant recirculation pump - V51-
⇒ [“2.2 Summary of components - Coolant recirculation pump V51”, page 189](#) .

3.3 Removing and installing small coolant pump

Removing

- Drain coolant ⇒ [“1.3 Draining and filling coolant”, page 179](#) .
- Remove air filter housing
⇒ [“3.2 Removing and installing air filter housing”, page 308](#) .
- Loosen clamp -2-.
- Disconnect the connector -arrow- from the charge pressure sender - G31- .
- Unscrews the screws -1- and -4- and remove the charge-air pipe with the hose downwards.



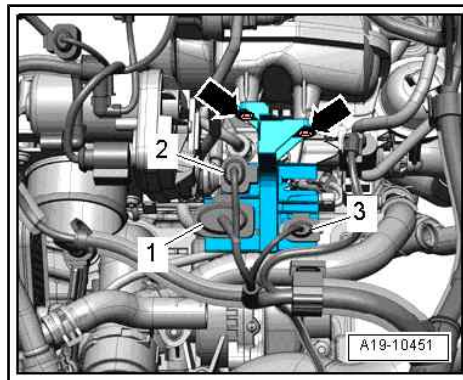
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**SKODA**

Octavia II 2004 ➤ , Octavia II 2010 ➤ , Superb II 2008 ➤ , Superb II 20 ...

1.8/112; 118 kW; 2.0/147 kW TSI engine - Edition 06.2019

- Release screws -arrows- and remove plug connections -1- to -3- from the holder.



- Expose the wiring harness on the coolant pipe -arrow-.
- Remove screws -2- and -3-.
- Remove small coolant pipe from the coolant pump and from the hoses -1- and -4-.

Installing

The installation occurs in reverse order. However, pay attention to the following:

- Top up coolant
⇒ [“1.3 Draining and filling coolant”, page 179](#) .

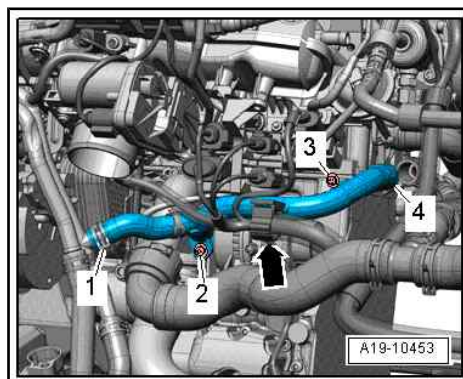
Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Coolant pipes
⇒ [“3.1 Summary of components - coolant pipe”, page 202](#) .
- ◆ Charge air pipe
⇒ [“2.1 Summary of components - charge air cooler”, page 274](#) .



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4 Coolers, radiator, radiator fan

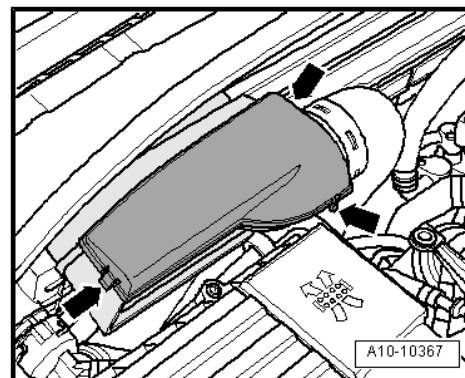
⇒ ["4.1 Removing and installing fan shroud for radiator fan V7 and V35", page 207](#)

⇒ ["4.2 Removing and installing radiator", page 208](#)

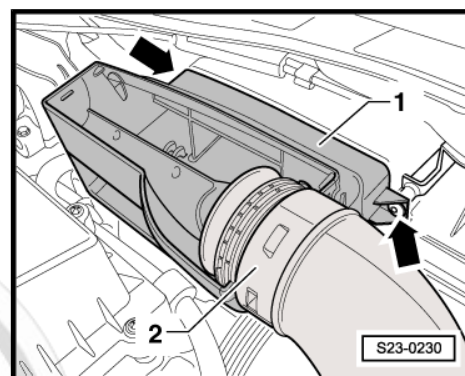
4.1 Removing and installing fan shroud for radiator fan - V7- and -V35-

Removing

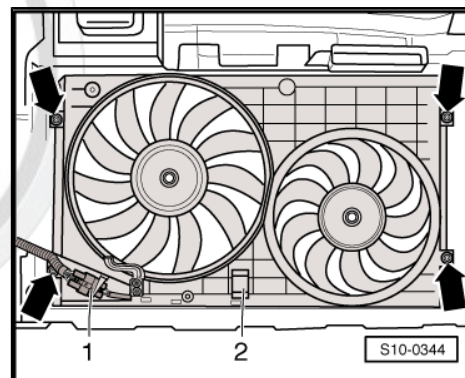
- Remove cover for connection fitting, to do so release lateral retaining clasps -arrows-.



- Release screws -arrows- for connection fitting -1- and take connecting hose -2- out of the guide.



- Unscrew the top securing bolts -arrows above- of the fan shroud.
- Remove noise insulation ⇒ Body Work ⇒ Rep. gr. 50 .

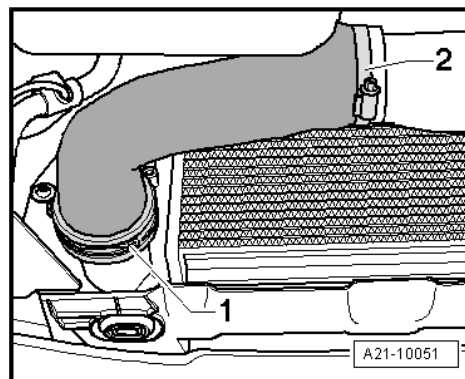


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- Remove the charge air hose -1-, -2- and seal the charge air cooler with a clean cloth.



- Disconnect plug connection -1-.
- Unscrew the bottom securing bolts -arrows below- of the fan shroud.
- Remove fan shroud downwards.

Installing

Installation occurs in reverse order for removal.

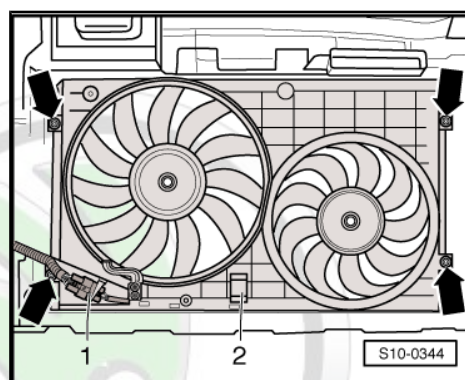
Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ♦ Fan shroud
⇒ [“1.1 Summary of components - Parts of the cooling system fitted to body”, page 176](#) .



4.2 Removing and installing radiator

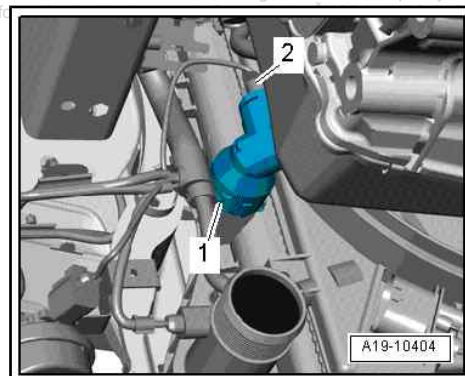
Special tools and workshop equipment required

- ♦ Catch pan , e.g. -VAS 6208-
- ♦ Pliers for spring-type clips

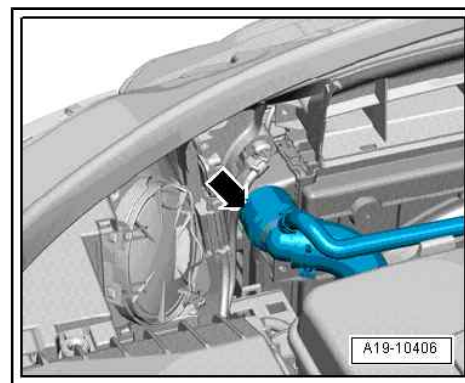
Removing

- Disconnect plug connection -2-.
- Drain coolant ⇒ [“1.3 Draining and filling coolant”, page 179](#) .
- Remove fan shroud with radiator fans
⇒ [“4.1 Removing and installing fan shroud for radiator fan V7 and V35”, page 207](#) .

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- Remove coolant support at the top cooler -arrow-.



- Remove screws -1- and -2- and remove cooler downwards.

Installing

The installation occurs in reverse order. However, pay attention to the following:

- If a cooler is assembled, the old (drained) coolant may not be used.
- Top up coolant
⇒ [“1.3 Draining and filling coolant”, page 179](#) .

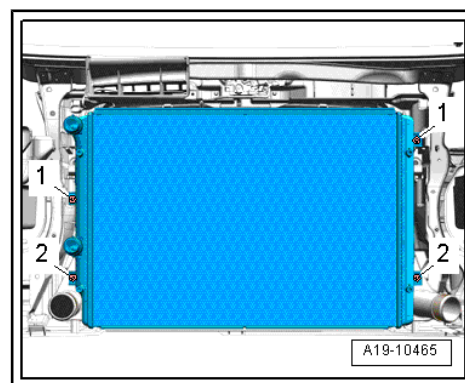
Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Radiator
⇒ [“1.1 Summary of components - Parts of the cooling system fitted to body”, page 176](#) .



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20 – Fuel supply system

1 Fuel tank/fuel delivery unit

- ⇒ [“1.1 Summary of components - fuel tank for vehicles with front-wheel drive”, page 210](#)
- ⇒ [“1.2 Summary of components - fuel tank for vehicles with four-wheel drive”, page 212](#)
- ⇒ [“1.3 Separating push-on couplings”, page 215](#)
- ⇒ [“1.4 Summary of components - fuel filter”, page 218](#)
- ⇒ [“1.5 Extract fuel from the fuel tank”, page 219](#)
- ⇒ [“1.6 Removing and installing fuel tank for vehicles with front-wheel drive”, page 221](#)
- ⇒ [“1.7 Removing and installing fuel tank for vehicles with four-wheel drive”, page 223](#)
- ⇒ [“1.8 Removing and installing fuel pump for vehicles with front-wheel drive”, page 227](#)
- ⇒ [“1.9 Removing and installing fuel pump for vehicles with four-wheel drive up to MY 2008”, page 230](#)
- ⇒ [“1.10 Removing and installing fuel pump for vehicles with four-wheel drive from MY 2009”, page 232](#)
- ⇒ [“1.11 Removing and installing the fuel gauge sender G ”, page 236](#)
- ⇒ [“1.12 inspecting fuel pump”, page 238](#)
- ⇒ [“1.13 Removing and installing fuel gauge encoder 2 G169 with the suction jet pump”, page 247](#)

1.1 Summary of components - fuel tank for vehicles with front-wheel drive

Octavia II



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.



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1 - Mounting part

2 - Screw cap

- ☐ replace if damaged

3 - Earth connection

- ☐ check correct fitting

4 - Screw

- ☐ 11 Nm

5 - Guide

6 - Screw

- ☐ Replace after disassembly
- ☐ 25 Nm
- ☐ Only use screws with loose washers. Wind-screens ➔ ETKA - Electronic Catalogue of Original Parts .

7 - Fuel tank

- ☐ Removing and installing
➔ [“1.6 Removing and installing fuel tank for vehicles with front-wheel drive”, page 221](#)

8 - Circlip

9 - Unbolt bracket for exhaust pipe

10 - Tensioning strap

- ☐ Check fitting position

11 - Protection plate

12 - Feed line

- ☐ to fuel rail
- ☐ check correct fitting

13 - Fuel filter

- ☐ Fitting position: arrow points in direction of flow

14 - Vent line

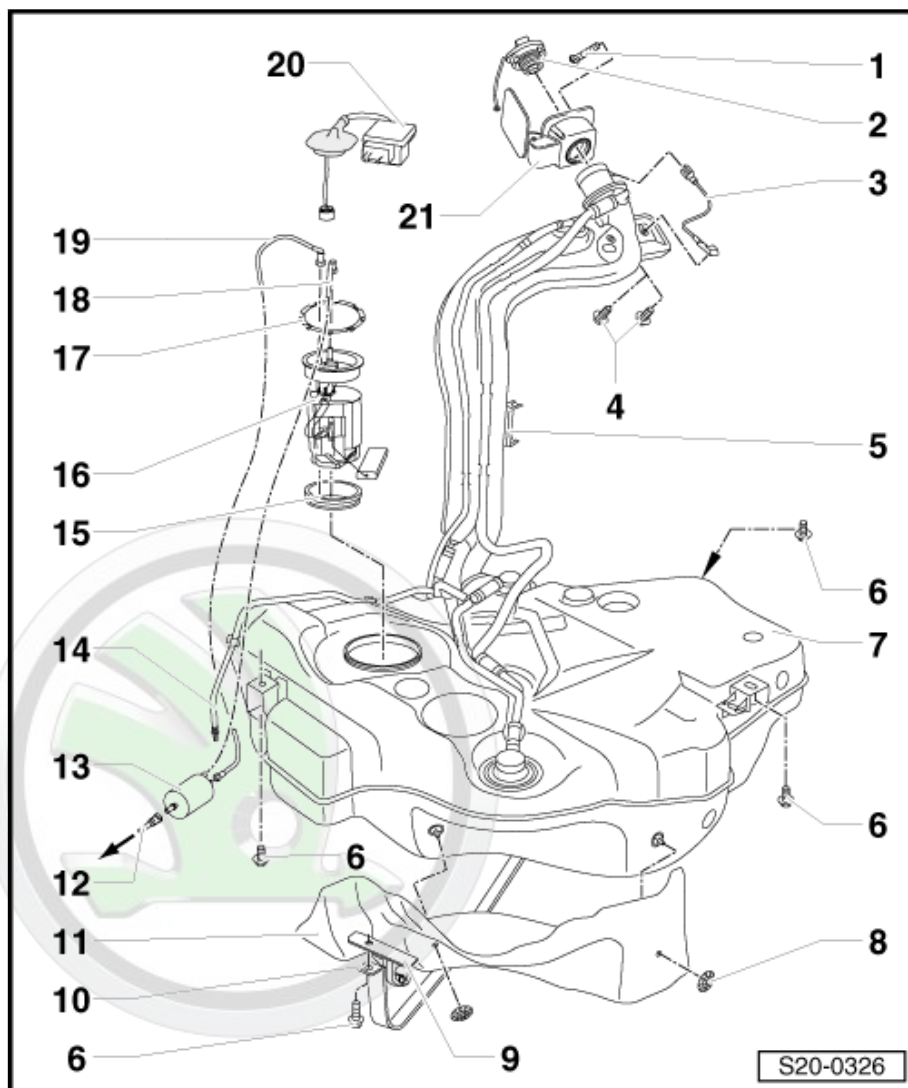
- ☐ Clipped onto side of fuel tank.
- ☐ check correct fitting

15 - Sealing ring

- ☐ replace
- ☐ to be inserted dry into the opening of the fuel tank
- ☐ only moisten the inner seal of the flange with fuel for fitting purposes

16 - Fuel pump

- ☐ Removing and installing
➔ [“1.8 Removing and installing fuel pump for vehicles with front-wheel drive”, page 227](#)
- ☐ inspecting fuel pump ➔ [“1.12 inspecting fuel pump”, page 238](#)
- ☐ Note correct installation position on the fuel tank
➔ [Fig. “Fitting location of the fuel delivery unit””, page 212](#)
- ☐ with fuel gauge sender - G-
- ☐ Removing and installing the fuel gauge sender - G-
➔ [“1.11 Removing and installing the fuel gauge sender G ”, page 236](#)



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- ☐ Clean strainer if dirty

17 - Lock ring

- ☐ check correct fitting
- ☐ 110 Nm

18 - Feed line

- ☐ black
- ☐ Clipped onto side of fuel tank.
- ☐ check correct fitting

19 - Return-flow line

- ☐ blue
- ☐ Clipped onto side of fuel tank.
- ☐ check correct fitting

20 - Fuel pump control unit - J538-

- ☐ after replacing, adapt the engine control unit - J623- to the fuel pump control unit - J538- ⇒ Vehicle diagnostic tester
- ☐ Check ⇒ Vehicle diagnostic tester

21 - Fuel tank lid unit

- ☐ with rubber bowl
- ☐ removing and installing ⇒ Body Work ⇒ Rep. gr. 55

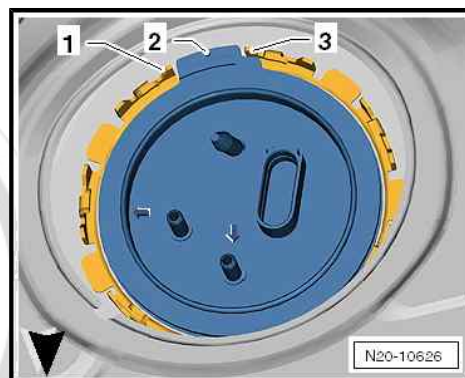
Fitting location of the fuel delivery unit

The peg -2- on the fuel delivery unit must be between the pegs -1- and -3-.



Note

- ♦ The -arrow- shows the direction of travel.
- ♦ The fuel delivery unit can only be installed in this position.



1.2 Summary of components - fuel tank for vehicles with four-wheel drive

Octavia II, Superb II, Yeti



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

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1 - Feed line

- ☐ black
- ☐ check for firm seating

2 - Return-flow line

- ☐ blue
- ☐ check for firm seating

3 - Sealing ring

- ☐ replace
- ☐ insert dry into the opening of the fuel tank
- ☐ only moisten the inner seal of the flange with fuel for fitting purposes

4 - Fuel pump

- ☐ installing and removing for vehicles up to MY 2008
⇒ ["1.9 Removing and installing fuel pump for vehicles with four-wheel drive up to MY 2008", page 230](#)
- ☐ installing and removing for vehicles from MY 2009
⇒ ["1.10 Removing and installing fuel pump for vehicles with four-wheel drive from MY 2009", page 232](#)
- ☐ inspecting fuel pump
⇒ ["1.12 inspecting fuel pump", page 238](#)
- ☐ Note installation position on the fuel tank
⇒ [Fig. "Fitting position of the flange of the fuel delivery unit and the fuel gauge sender 2 -G169- """, page 215](#)
- ☐ with fuel gauge sender - G-
- ☐ Removing and installing the fuel gauge sender - G-
⇒ ["1.11 Removing and installing the fuel gauge sender G ", page 236](#)
- ☐ Clean strainer if dirty

5 - Lock ring

- ☐ check for firm seating
- ☐ 110 Nm

6 - Fuel pump control unit - J538-

- ☐ after replacing, adapt the engine control unit - J623- to the fuel pump control unit - J538- ⇒ Vehicle diagnostic tester
- ☐ Check ⇒ Vehicle diagnostic tester

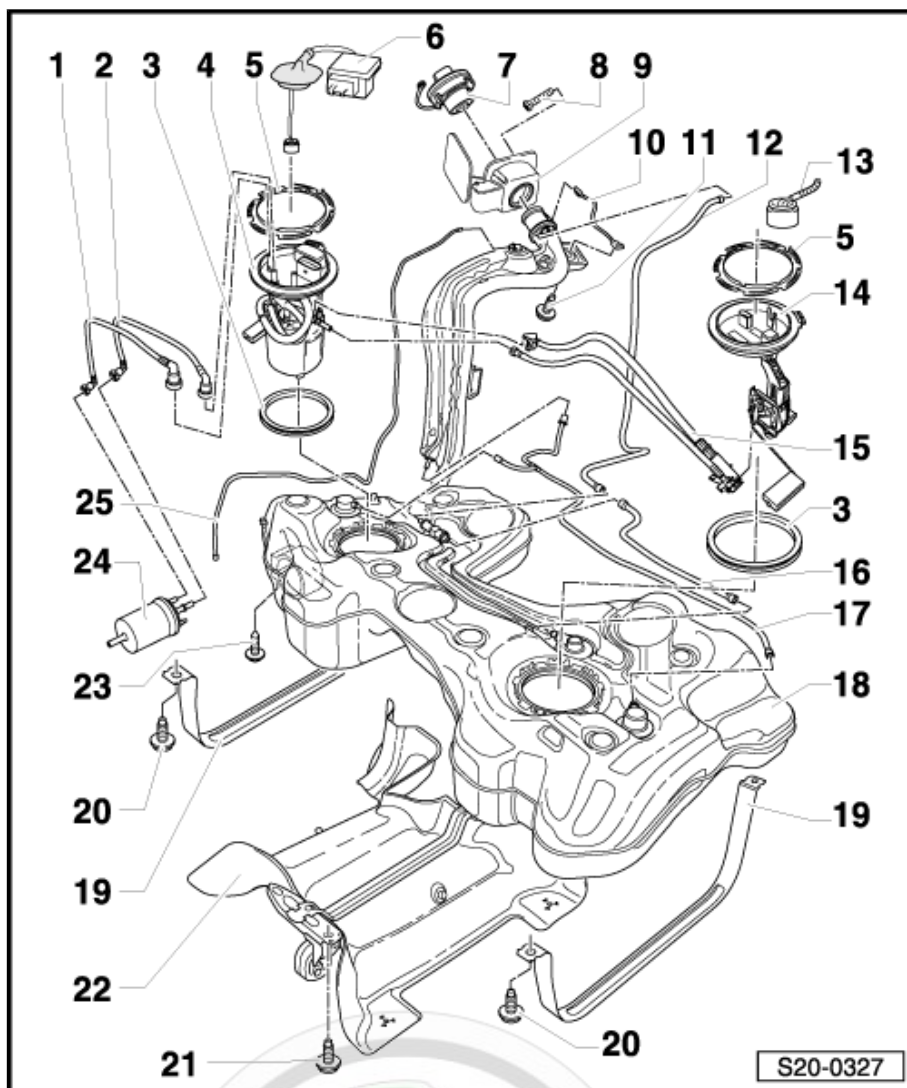
7 - Screw cap

- ☐ replace if damaged

8 - Fixing screw

9 - Fuel tank lid unit

- ☐ with rubber bowl
- ☐ Removing and installing ⇒ Body Work; Rep. gr. 55



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**SKODA****10 - Earth connection**

- ☐ check for firm seating

11 - Screw

- ☐ 11 Nm

12 - Tank ventilation**13 - Connector**

- ☐ Fuel gauge transmitter 2 - G169-

14 - Fuel gauge transmitter 2 - G169-

- ☐ Removing and installing
⇒ [“1.13 Removing and installing fuel gauge encoder 2 G169 with the suction jet pump”, page 247](#)

15 - Suction spray pump

- ☐ clipped in place on fuel gauge sensor 2 - G169-
- ☐ Removing and installing
⇒ [“1.13 Removing and installing fuel gauge encoder 2 G169 with the suction jet pump”, page 247](#)
- ☐ is a component part of position -14-

16 - Tank ventilation**17 - Vent line****18 - Fuel tank**

- ☐ Removing and installing
⇒ [“1.7 Removing and installing fuel tank for vehicles with four-wheel drive”, page 223](#)

19 - Tensioning strap

- ☐ check fitting position:

20 - Screw

- ☐ Replace after disassembly
- ☐ 25 Nm

21 - Screw

- ☐ 23 Nm

22 - Protection plate

- ☐ riveted together with hanger of exhaust system

23 - Screw

- ☐ 3 Nm

24 - Fuel filter

- ☐ Summary of components ⇒ [“1.4 Summary of components - fuel filter”, page 218](#)

25 - Vent line

- ☐ Clipped onto side of fuel tank.
- ☐ check for firm seating

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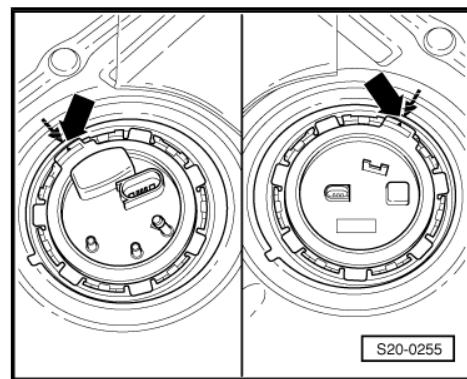
Fitting position of the flange of the fuel delivery unit and the fuel gauge sender 2 - G169-

Marking on the flange must be aligned with marking on the fuel tank -arrows-.



Note

The arrows on the fuel tank are hardly visible due to the floor panel.



1.3 Separating push-on couplings

Special tools and workshop equipment required

- ◆ Lever - T10468-

Observe safety instructions

⇒ [“2.1 Safety precautions when working on fuel supply system”, page 3](#).

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Note

The quick couplings of fuel, vacuum and ventilation lines are colour marked. The colour point at the quick coupling or the release button has the corresponding colour.

Push-on coupling	Colour coding on the quick coupling
Fuel feed line	black
Fuel return-flow line	blue
Vent line	White, beige
Vacuum line	green

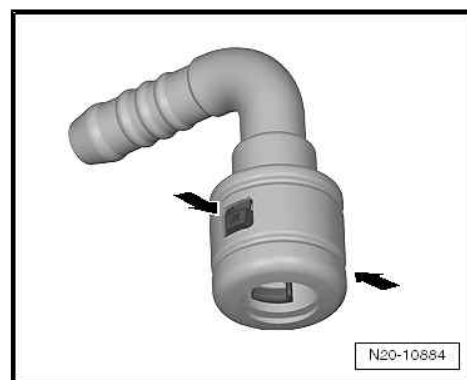


CAUTION

Fuel feed line is pressurised. Wear safety goggles and safety clothing, in order to avoid injuries and skin contact with fuel. Place cleaning cloths around the connection point before detaching hose connections. Reduce pressure by carefully removing the hose.

Version 1

Quick coupling with release buttons -arrows- on right and left.

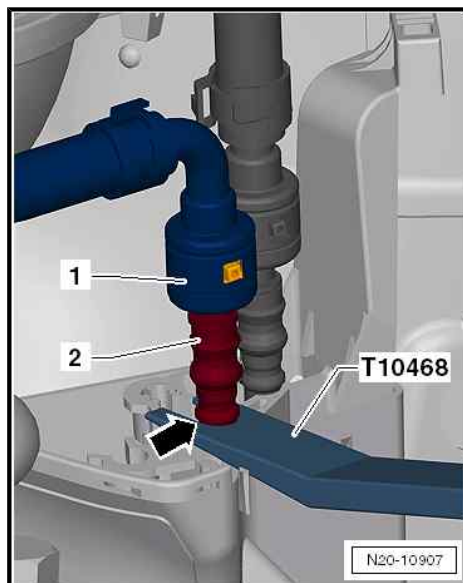




The separation point -1- in the engine compartment must be held in place.

- Insert the lever - T10468- between the heat shield and the stop -arrow- of the fuel line -2- and hold.

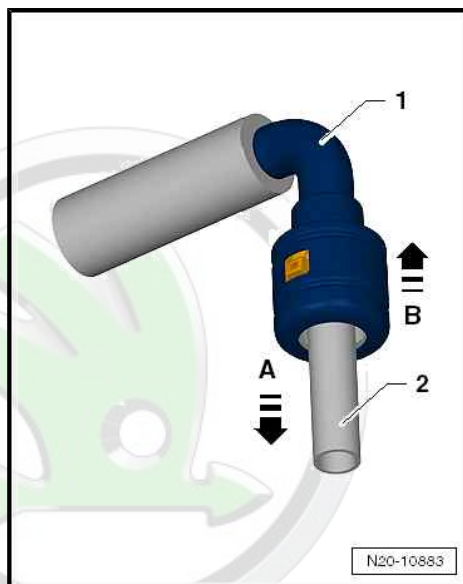
Continued for all coupling points:



- Press the quick coupling -1- in direction of arrow -A-.
- Press the release buttons and remove the quick coupling -1- from the fuel line -2- in direction of the arrow -B-.

Pay attention to the assignment of the colours when installing
⇒ [page 215](#) .

- Check the quick coupling for firm seating by pulling in the opposite direction!



Version 2

Push-on coupling with pull-release mechanism -arrow-.

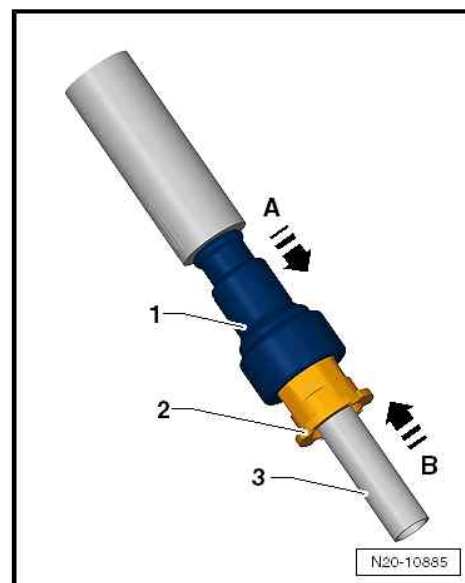


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- Press the quick coupling -1- in direction of arrow -A-.
- Pull pull-release mechanism -2- in direction of arrow -B-.
- Remove the quick coupling -1- from the fuel line -3- in direction of the arrow -B-.

Pay attention to the assignment of the colours when installing
⇒ [page 215](#) .

- Check the quick coupling for firm seating by pulling in the opposite direction!



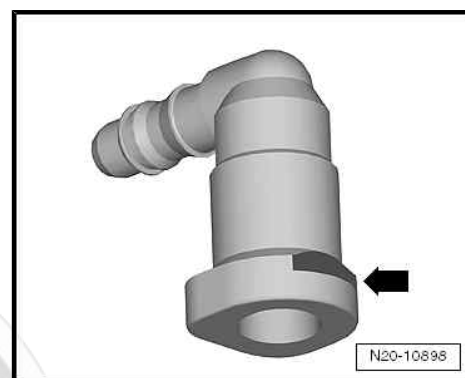
Version 3

Quick coupling with front button -arrow-.

- Press the release button -arrow- and detach the quick coupling.

Pay attention to the assignment of the colours when installing
⇒ [page 215](#) .

- Check the quick coupling for firm seating by pulling in the opposite direction!



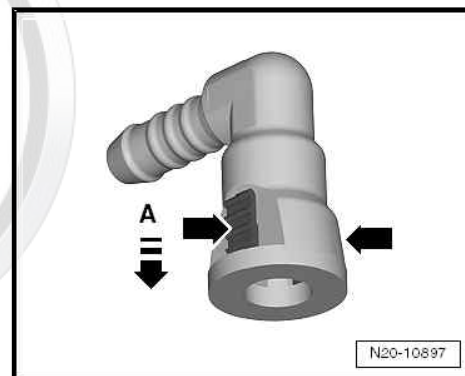
Version 4

Quick coupling with release buttons -arrows- on right and left.

- Press the quick coupling in direction of arrow -A-.
- Press release buttons -arrow- and detach quick coupling.

Pay attention to the assignment of the colours when installing
⇒ [page 215](#) .

- Check the quick coupling for firm seating by pulling in the opposite direction!



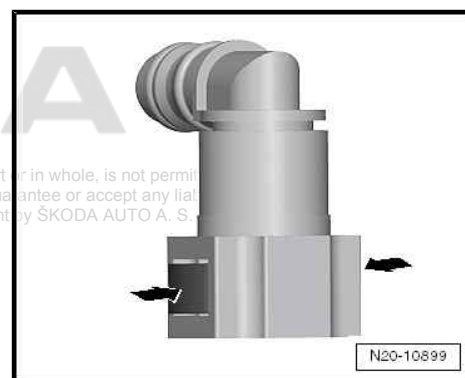
Version 5

Quick coupling with release buttons -arrows- on right and left.

- Press release buttons -arrow- and detach quick coupling.

Pay attention to the assignment of the colours when installing
⇒ [page 215](#) .

- Check the quick coupling for firm seating by pulling in the opposite direction!





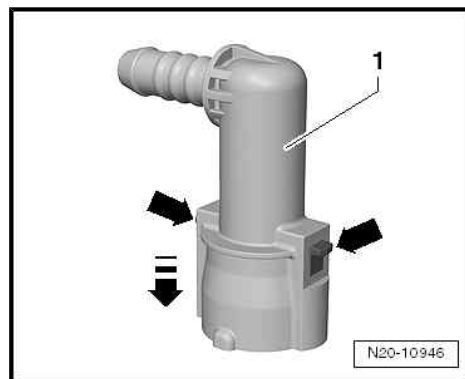
Version 6

Quick coupling with release buttons -arrows- on right and left.

- Press push-on coupling -1- in -direction of arrow- and hold pressed.
- Press release buttons -arrow- and detach quick coupling.

Pay attention to the assignment of the colours when installing
⇒ [page 215](#) .

- Check the quick couplings for firm seating by pulling in the opposite direction!



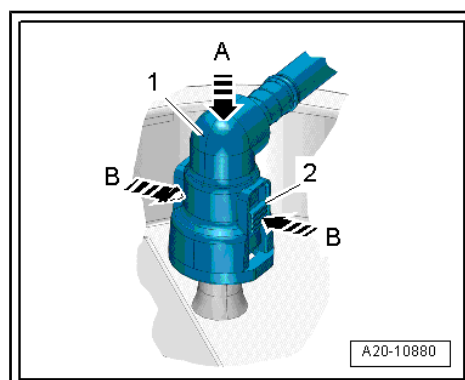
Version 7

Quick coupling -1- with release buttons -arrows- right and left.

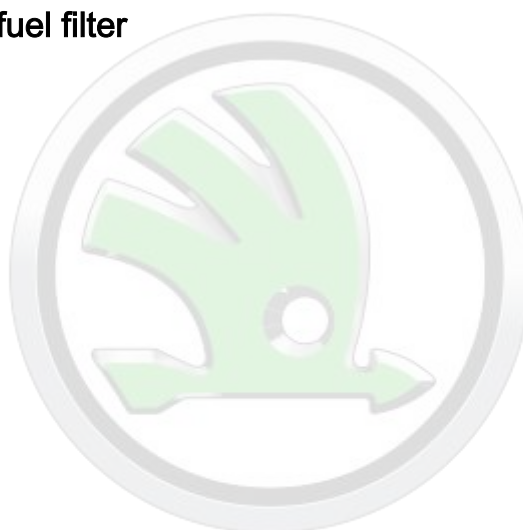
- Press quick coupling -1- in direction of arrow -A- and hold pressed.
- Press the release buttons -2- in direction of arrow -B- and remove the quick coupling -1-.

Pay attention to the assignment of the colours when installing
⇒ [page 215](#) .

- Check the quick couplings for firm seating by pulling in the opposite direction!



1.4 Summary of components - fuel filter



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1 - Fuel filter

- ☐ with installed pressure limiting valve for fuel return-flow line

Opening pressure:
0.60...0.68 MPa
(6.0...6.8 bar)

- ☐ do not interchange connections
- ☐ Fitting position
⇒ Fig. "Fitting position of the fuel filter",
page 219

2 - fuel feed line

- ☐ black
- ☐ from fuel tank
- ☐ press in the circlip to unlock

3 - Fuel return-flow line

- ☐ blue
- ☐ to fuel tank
- ☐ press in the circlip to unlock

4 - fuel feed line

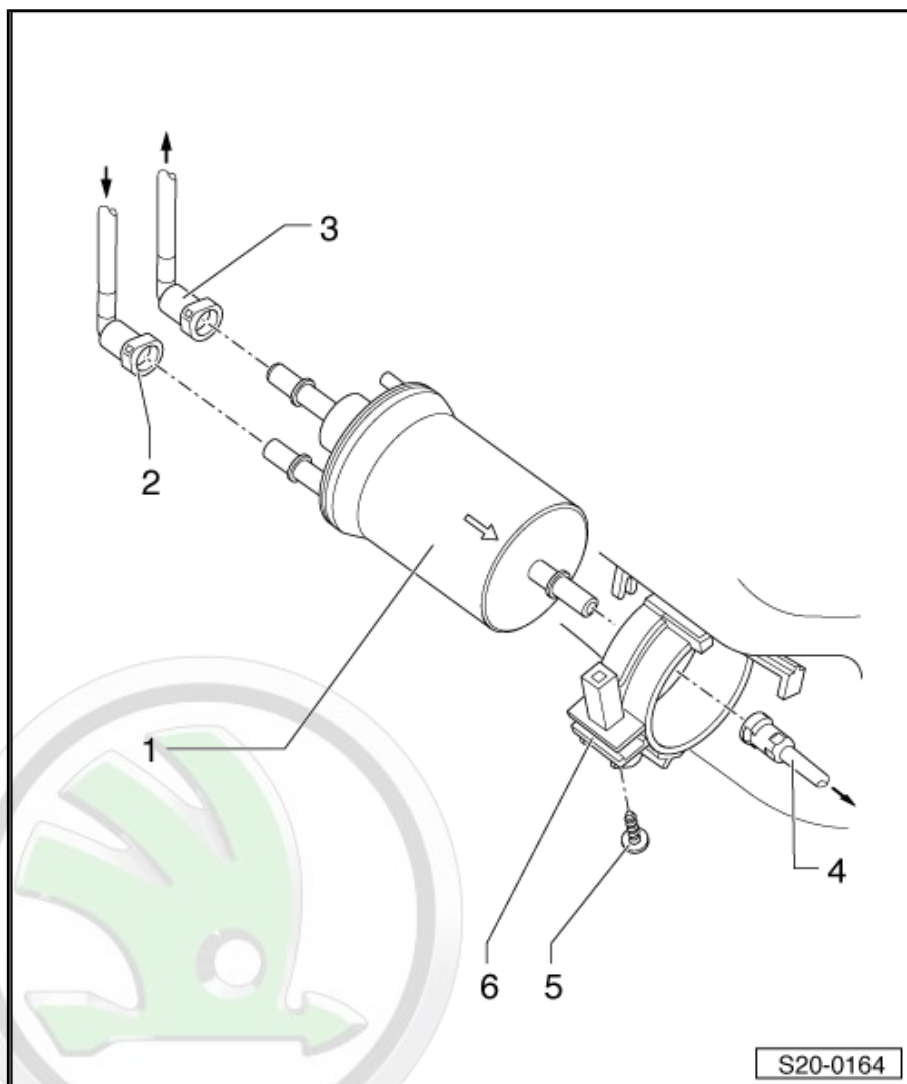
- ☐ black
- ☐ to the engine
- ☐ press in the circlip to unlock

5 - Screw

- ☐ 3 Nm

6 - Mounting bracket

- ☐ for fuel filter
- ☐ attached to the fuel tank

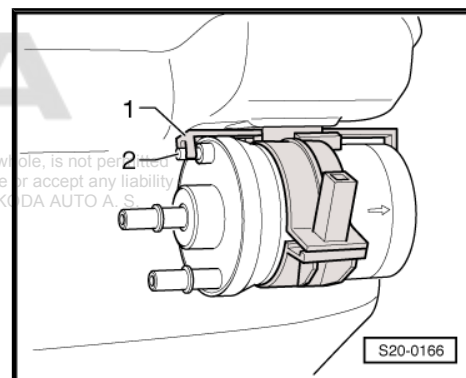


Fitting position of the fuel filter

The pin -2- at the filter housing must engage in the recess -1- of the bracket.

The direction of flow is marked by arrows.

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1.5 Extract fuel from the fuel tank

Special tools and workshop equipment required

- ◆ Hose adapter , e. g. -V.A.G 1318/16 -
- ◆ Adapter , e.g. -V.A.G 1318/17-
- ◆ Auxiliary measuring set, , e. g. -V.A.G 1594 C-



- ◆ Battery
- ◆ Fuel tank



Note

If there are functional problems of the fuel delivery unit suction off fuel with fuel extraction device e.g. -VAS 5190- .

Work procedure

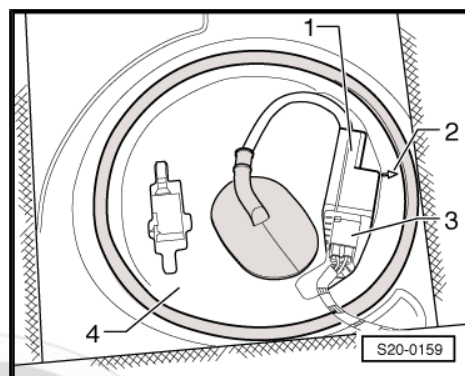
Observe safety measures when working on the fuel system
⇒ "2.1 Safety precautions when working on fuel supply system", page 3 .

Observe rules for cleanliness
⇒ "3.1 Rules of cleanliness", page 6 .

- Switch off ignition and all electrical loads, and pull out ignition key.
- Removing rear seat bench ⇒ Body Work; Rep. gr. 72 .
- Unclip cover -4- with the fuel pump control unit - J538- -1-.

Vehicles with auxiliary heating

- Disconnect the plug connection of the dosing pump - V54- .



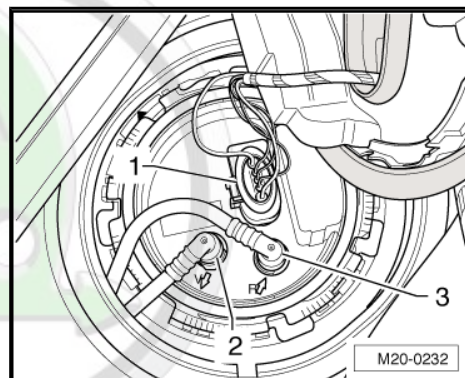
Continued for all vehicles

- Remove the plug -1- from the black feed line -2-.



Note

Press in the securing ring in order to unlock the line.



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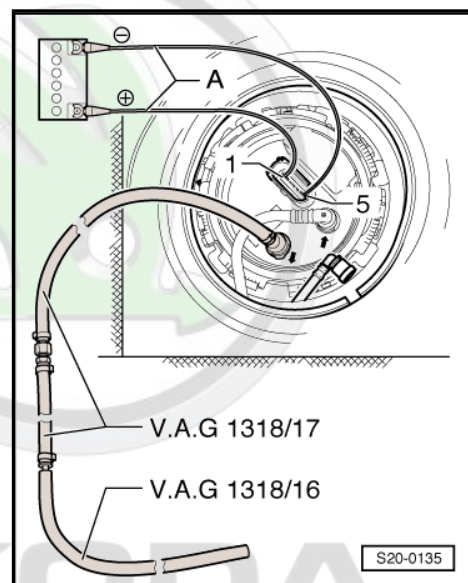
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- Connect the adapter -V.A.G 1318/16- with the adapter -V.A.G 1318/17- and fit this “drain pipe” thus prepared onto the feed support of the fuel delivery unit.
- Hold the “drain pipe” in a suitable fuel tank.
- Connect the battery and the contacts of the fuel pump with auxiliary cables -A- from the auxiliary measuring set - V.A.G 1594/C- as follows:
Battery positive terminal (+) to contact -1- of the fuel pump.
Battery negative terminal (-) to contact -5- of the fuel pump.

The fuel pump runs and suctions off fuel.

 NOTICE

In order to prevent an overflow of fuel in case of a too small fuel tank, the fuel pump must not run unattended.



1.6 Removing and installing fuel tank for vehicles with front-wheel drive

Octavia II

Special tools and workshop equipment required

- ◆ Engine/gearbox jack , e.g. -V.A.G 1383 A-
- The fuel tank must be empty for weight reasons when removing it. If necessary, extract fuel from the fuel tank
⇒ [“1.5 Extract fuel from the fuel tank”, page 219](#) .

Removing

Observe safety measures when working on the fuel system
⇒ [“2.1 Safety precautions when working on fuel supply system”, page 3](#) .

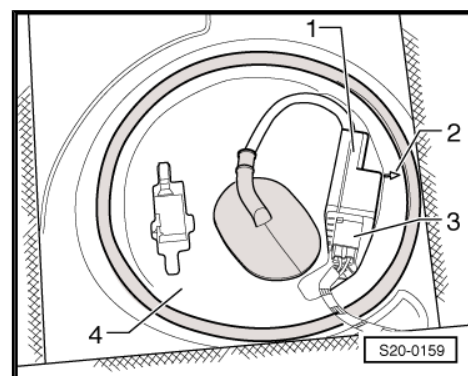
Observe rules for cleanliness
⇒ [“3.1 Rules of cleanliness”, page 6](#) .

- Switch off ignition and all electrical loads, and pull out ignition key.
- Removing rear seat bench ⇒ Body Work; Rep. gr. 72 .
- Unclip cover -4- with the fuel pump control unit - J538- -1-.



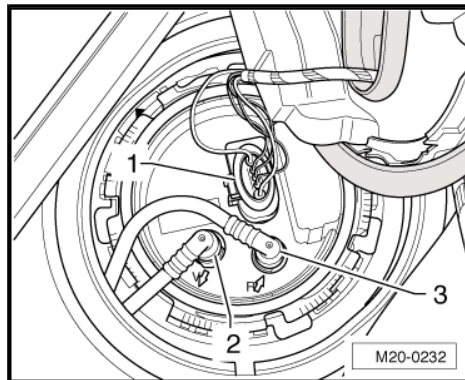
Note

For vehicles with auxiliary heating, the plug connection for the dosing pump - V54- must also be disconnected.

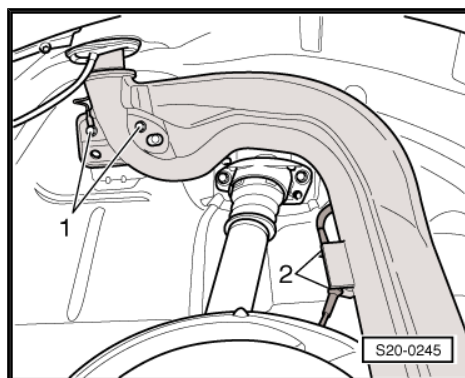




- Disconnect plug -1- from the fuel delivery unit.
- Clean area around fuel filler neck.
- Unscrew right rear wheel.
- Remove the rear right wheelhouse liner ⇒ Body Work ⇒ Rep. gr. 66 .



- Remove screws -1- for filler neck on the body.
- Unclip the electrical cable from the bracket -2- at the top and bottom of the filler neck.

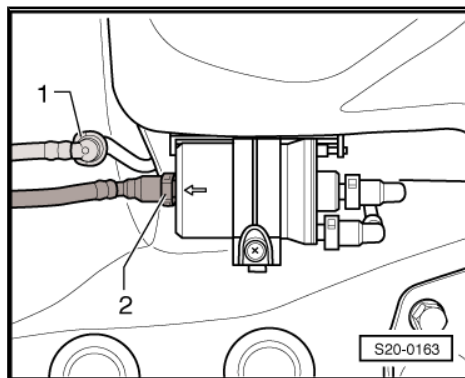


- Disconnect vent line -1- (white) and fuel feed line -2- (black) at the connection point.



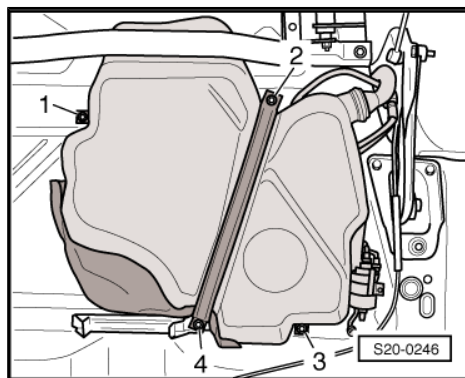
Note

- ♦ For vehicles with auxiliary heating, the fuel line for the dosing pump - V54- must also be disconnected.
- ♦ Press in the securing ring in order to unlock the line.
- Remove the middle part of the exhaust system
⇒ [“1.6 Replacing middle or rear part of the exhaust system”, page 338](#) .
- Unscrew securing bolts -2- and -4- and remove tensioning strap.
- Support the fuel tank using the engine/gearbox jack - V.A.G 1383 A- .
- Unscrew securing bolts -1- and -3-.
- Slightly lower the fuel tank.



Note

The filler neck must be “extracted” between body and rear axle.
Lift fuel tank down from the engine and gearbox jack - V.A.G 1383 A- with a 2nd mechanic.



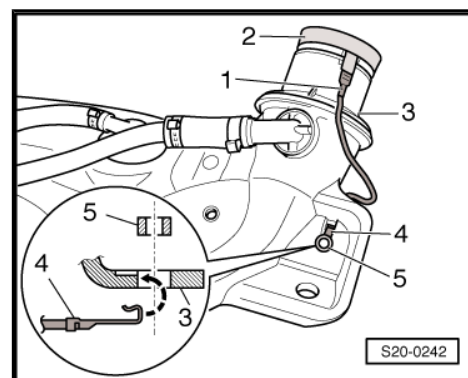
Installing

- Check both earth connections for corrosion, if necessary remove corrosion.

- Check fitting position of the earth lead -1-.
- The plug -1- must be firmly fitted to the metal plate ring -2-.
- The contact tab -4- must be hung on the fuel tank -3- and secured with the spacer bush -5-.
- Guide the filler neck between rear axle and structure with the assistance of a 2nd mechanic.
- Position the fuel tank onto the engine/gearbox jack - V.A.G 1383 A- .

Further installation occurs in reverse order. However, pay attention to the following:

- ◆ Use only screws with loose washers for the tensioning strap. Windscreens ➔ ETKA - Electronic Catalogue of Original Parts .
- ◆ Lay the vent and fuel lines without any kinks.
- ◆ Do not mix-up the feed line and the return-flow line (the return-flow line is blue, the feed line is black).
- ◆ Make sure the line connections fit tightly.
- ◆ Check earth connection of fuel tank/body at filler neck.
- ◆ After installing the fuel tank, check whether the lines are also clipped in place on the fuel tank.
- Clip on cover -4- with fuel pump control unit - J538- -1-.
- The arrow -2- on the cover points in direction of travel.

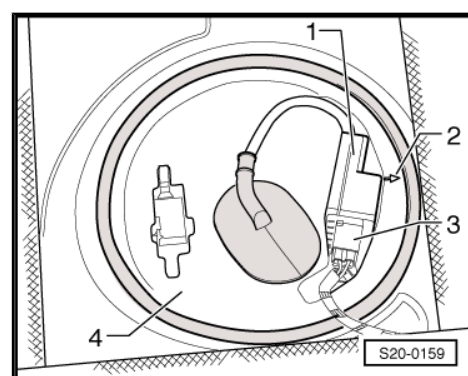


WARNING

Risk of fuel container explosion on fuel pump start-up!

Risk of serious injuries and burns.

- ◆ After installing a new or completely emptied fuel tank, you must replenish a minimum of 5 litres of fuel right away.



Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Fuel tank
➔ ["1.1 Summary of components - fuel tank for vehicles with front-wheel drive", page 210](#) .

1.7 Removing and installing fuel tank for vehicles with four-wheel drive

Octavia II, Superb II, Yeti

Special tools and workshop equipment required

- ◆ Engine/gearbox jack , e.g. -V.A.G 1383 A-
- The fuel tank must be empty for weight reasons when removing it. If necessary, extract fuel from the fuel tank
➔ ["1.5 Extract fuel from the fuel tank", page 219](#) .



Removing

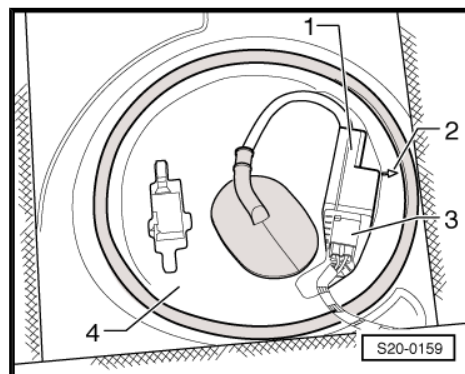
Observe safety measures when working on the fuel system
⇒ [“2.1 Safety precautions when working on fuel supply system”, page 3](#) .

Observe rules for cleanliness
⇒ [“3.1 Rules of cleanliness”, page 6](#) .

- Switch off all electrical components and withdraw key from ignition lock.
- Removing rear seat bench ⇒ Body Work; Rep. gr. 72 .
- Unclip cover -4- with the fuel pump control unit - J538- -1-.

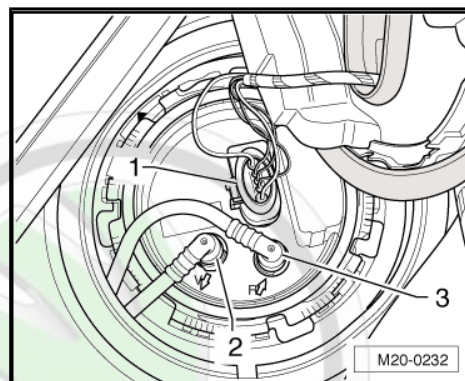
Vehicles with auxiliary heating

- Disconnect the plug connection of the dosing pump - V54- .
- Remove the rubber grommet from the cover of the fuel delivery unit and pull out the wiring.

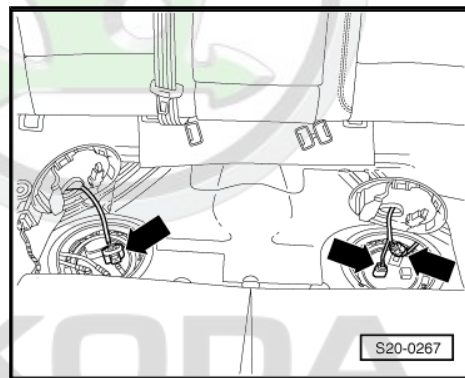


Continued for all vehicles

- Unplug connector -1- from fuel temperature sender.

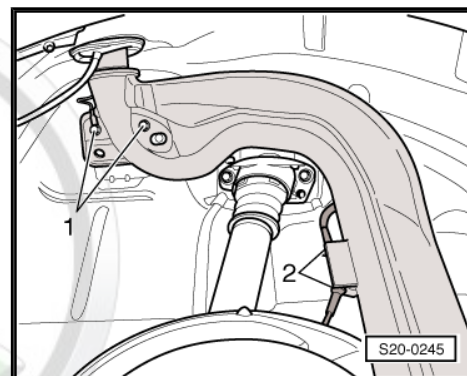


- Remove the cover of fuel gauge sender 2 - G169- (in the figure on the right) and disconnect the connectors on the right -arrows-.
- Open the fuel tank cap and clean around the fuel filler neck.
- Unscrew the cap from the fuel filler neck.
- Close the opening of the fuel filler neck with a clean foam piece, so that no dirt can penetrate.
- Remove the rear right wheelhouse liner ⇒ Body Work; Rep. gr. 66 .



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- Remove screws -1- for filler neck on the body.
- Unclip the electrical cable from the bracket -2- at the top and bottom of the filler neck.



- Disconnect vent line -1- (white) and fuel feed line -2- (black) at the connection point.

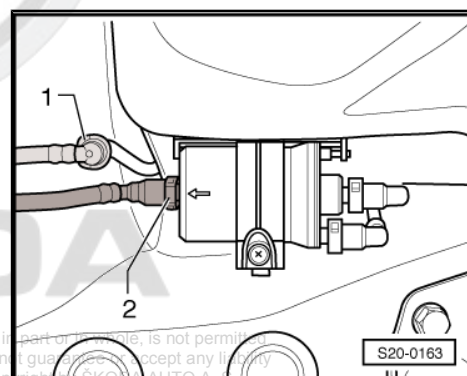


Note

Press in the securing ring in order to unlock the line.

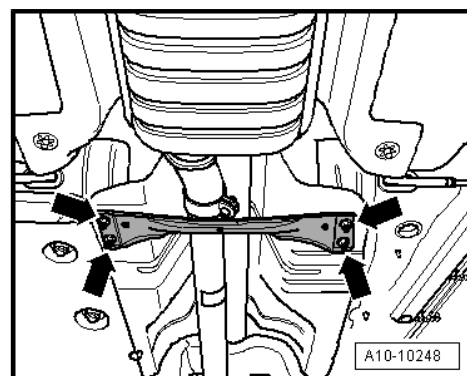
Vehicles with auxiliary heating

- Disconnect the fuel line from the dosing pump - V54- .

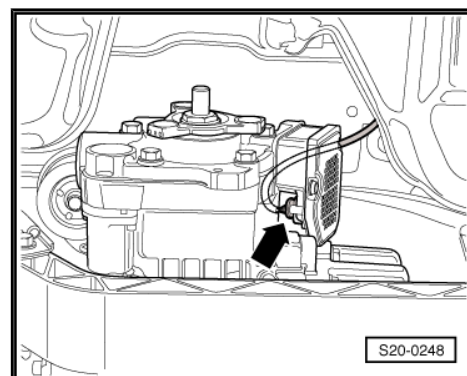


Continued for all vehicles

- Remove rear tunnel bridge -arrows-.
- Unscrew the rear part of the exhaust system from two retaining straps in front of and behind the front silencer.
- Slacken nuts of clamping sleeve.
- Remove screws for rear exhaust pipe hanger.
- Remove the rear silencer.
- Remove propshaft ⇒ Gearbox; Rep. gr. 39 .

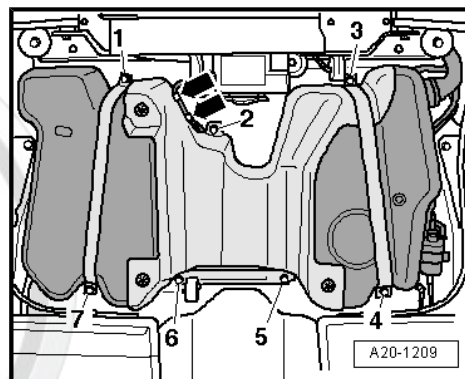


- Disconnect plug -arrow- at four-wheel drive control unit - J492- .

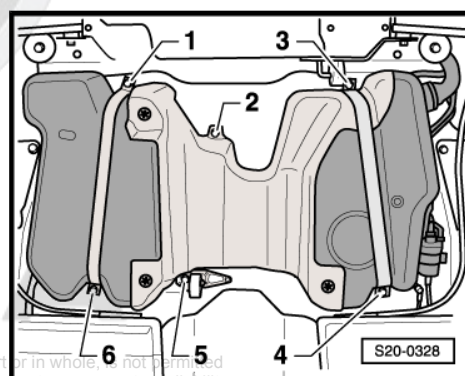




- Unhook wiring harness -arrows- and place to the side.



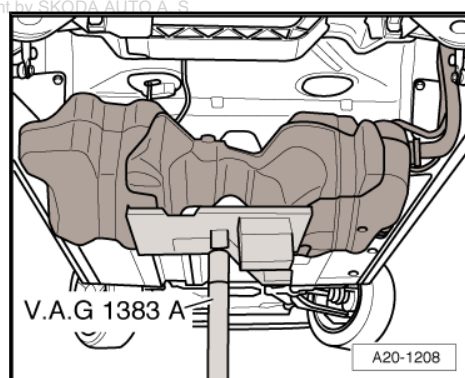
- First of all screw out the screws -2- and -5-.



- Support the fuel tank using the engine and gearbox jack - V.A.G 1383 A- .
- Unscrew the screws for the tensioning straps -1-, -3-, -4- and -6-.
- Slightly lower the fuel tank using the engine and gearbox jack - V.A.G 1383 A- .
- Then remove the fuel tank from the engine/gearbox jack - V.A.G 1383 A- and pull through the filler neck between the body and the rear axle with the help of a second mechanic.

Installing

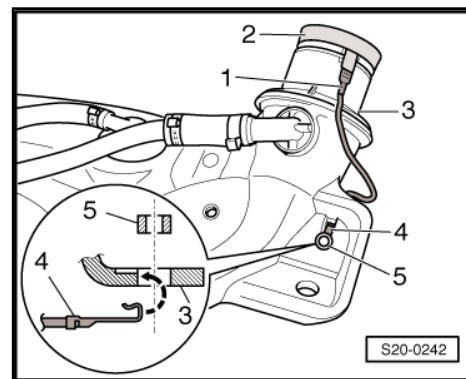
- Check both earth connections for corrosion, if necessary remove corrosion.



- Check fitting position of the earth lead -1-.
- The plug -1- must be firmly fitted to the metal plate ring -2-.
- The contact tab -4- must be hung on the fuel tank -3- and secured with the spacer bush -5-.
- Guide the filler neck between rear axle and structure with the assistance of a 2nd mechanic.
- Position the fuel tank onto the engine/gearbox jack - V.A.G 1383 A- .

Further installation occurs in reverse order. Pay attention to the following:

- ◆ Lay the vent and fuel lines without any kinks.
- ◆ Do not mix-up the feed line and the return-flow line (the return-flow line is blue, the feed line is black).
- ◆ Make sure the line connections fit tightly.
- ◆ Check the earth connection of the fuel tank at the body on the filler neck.
- ◆ After installing the fuel tank, check whether the lines are also clipped in place on the fuel tank.
- Clip on cover -4- with fuel pump control unit - J538- -1-.
- The arrow -2- on the cover points in direction of travel.

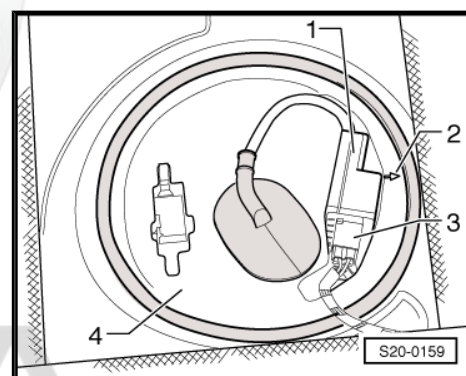


WARNING

Risk of fuel container explosion on fuel pump start-up!

Risk of serious injuries and burns.

- ◆ After installing a new or completely emptied fuel tank, you must replenish a minimum of 5 litres of fuel right away.



Tightening torques - summaries of components



Note

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Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Fuel tank
⇒ ["1.2 Summary of components - fuel tank for vehicles with four-wheel drive", page 212](#) .
- ◆ Rear tunnel bridge ⇒ Body Work - Assembly work; Rep. gr. 50 .

1.8 Removing and installing fuel pump for vehicles with front-wheel drive

Octavia II, Superb II

Special tools and workshop equipment required

- ◆ Key - T10202-

Removing

Observe safety measures when working on the fuel system
⇒ ["2.1 Safety precautions when working on fuel supply system", page 3](#) .



Observe rules for cleanliness

⇒ ["3.1 Rules of cleanliness", page 6](#) .

- The fuel tank must not be more than $\frac{3}{4}$ full.



Note

If necessary, extract fuel from the fuel tank

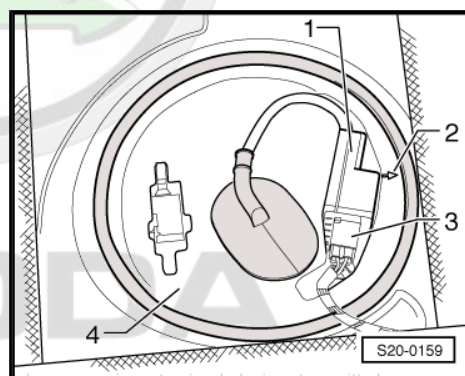
⇒ ["1.5 Extract fuel from the fuel tank", page 219](#) .

- Switch off ignition and all electrical loads, and pull out ignition key.
- Removing rear seat bench ⇒ Body Work; Rep. gr. 72 .
- Unclip cover -4- with the fuel pump control unit - J538- -1-.



Note

On vehicles with auxiliary heating, the plug connection for the dosing pump - V54- must also be disconnected.

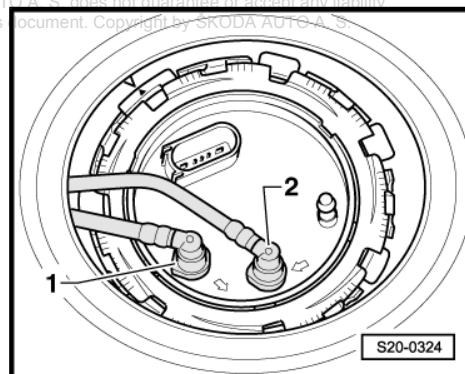


- Disconnect the plug connector, the black feed line -1- and the blue return-flow line -2-.



Note

- ♦ Press in the securing ring in order to unlock the line.
- ♦ For vehicles with auxiliary heating the suction line for the dosing pump - V54- must be pulled out additionally (open lower clamp).



- Open lock ring with the wrench - T10202- .



Note

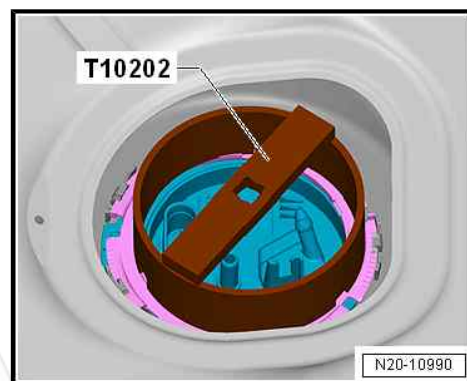
- ◆ Remove fuel pump from the fuel tank so that the electric cables and fuel hoses are not damaged and the float arm of the sender for fuel gauge display - G- is not bent.
- ◆ You must empty the old delivery unit before disposing of it if you wish to replace the fuel delivery unit.

- Pull the fuel delivery unit out of the opening of the fuel tank.

Installing

Installation is carried out in the reverse order. Pay attention to the following:

- Insert the new dry gasket ring for the flange into the opening of the fuel tank and moisten only from the inside with fuel for installing the closing flange.
- Insert the fuel pump into the fuel tank in such a way that the float arm of the sender for the fuel gauge display - G- is not bent.
- Press the closing flange downwards, install the lock ring and connect the fuel lines.

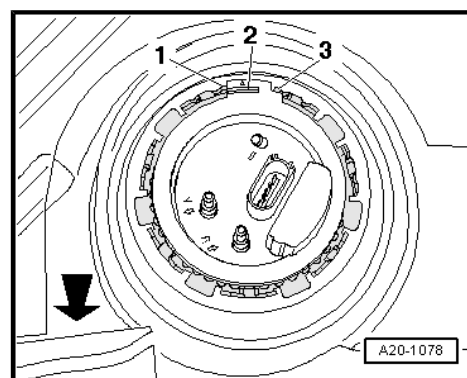


Note

Observe installation position of flange of fuel delivery unit. The peg -2- on the fuel delivery unit must be between the pegs -1- and -3-. The -arrow- shows the direction of travel.

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Octavia II

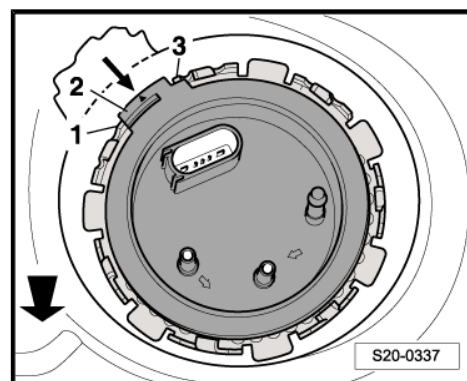


Superb II



Note

- ◆ Do not interchange the black feed line with the blue return-flow line (arrows on the flange of the fuel delivery unit).
- ◆ Make sure the line connections and the plug fit tightly.
- ◆ After installing the fuel delivery unit, check whether the feed line and the return-flow line have also been clipped in place on the fuel tank.





- Clip on cover -4- with fuel pump control unit - J538- -1-.

The arrow -2- on the cover points in direction of travel.

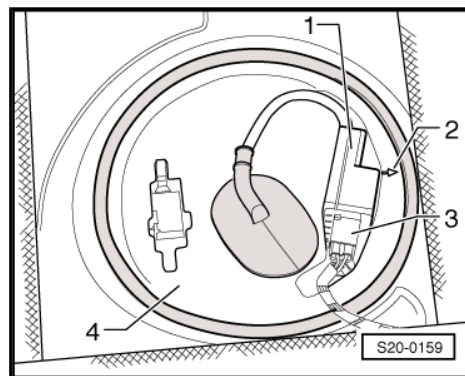
Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ♦ Fuel pump lock ring
⇒ [“1.1 Summary of components - fuel tank for vehicles with front-wheel drive”, page 210](#) .



1.9 Removing and installing fuel pump for vehicles with four-wheel drive up to MY 2008

Octavia II

Special tools and workshop equipment required

- ♦ Wrench for the lock ring - T10202-
- ♦ Protective gloves

Removing

Observe safety measures when working on the fuel system
⇒ [“2.1 Safety precautions when working on fuel supply system”, page 3](#) .

Observe rules for cleanliness
⇒ [“3.1 Rules of cleanliness”, page 6](#) .

- The fuel tank must not be more than $\frac{1}{3}$ full.



Note

If necessary, extract fuel from the fuel tank
⇒ [“1.5 Extract fuel from the fuel tank”, page 219](#) .

- Switch off all electrical components and withdraw key from ignition lock.
- Removing rear seat bench ⇒ Body Work; Rep. gr. 72 .
- Remove the cover from the fuel delivery unit.



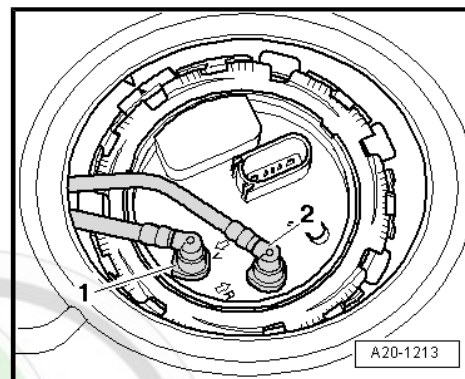
Note

On vehicles with auxiliary heating, the plug connection for the dosing pump - V54- must also be disconnected.

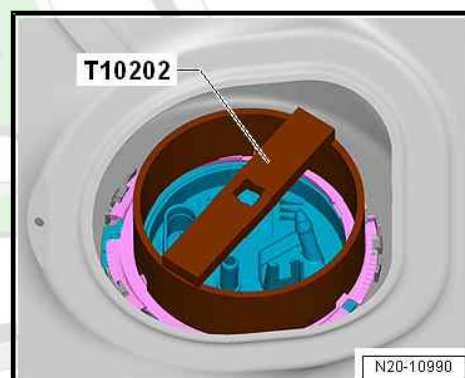
- Disconnect the plug as well as the black feed line -1- and the blue return-flow line -2- from the flange.

i Note

- ◆ Press in the securing ring in order to unlock the line.
- ◆ For vehicles with auxiliary heating the suction line for the dosing pump - V54- must be pulled out additionally (open lower clamp).



- Open lock ring with the wrench - T10202- .
- Pull closing flange and gasket ring for fuel pump out of the opening of the fuel tank and place to the side with the connected lines.

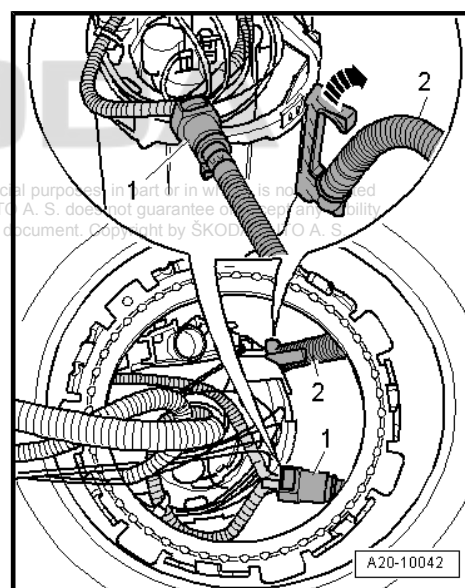


- Through the opening of the fuel tank, disconnect the fuel line -1- to the vacuum pump by pressing the release button.
- Unhook the fuel delivery line -2- at the fuel delivery unit, to do so pull the fixing clamp upwards -arrow-.

i Note

- ◆ You must wear protective gloves for removing the fuel delivery unit.
- ◆ Remove fuel pump from the fuel tank so that the electric cables and fuel hoses are not damaged and the float arm of the sender for fuel gauge display - G- is not bent.
- ◆ You must empty the old delivery unit before disposing of it if you wish to replace the fuel delivery unit.

- Pull the fuel delivery unit out of the opening of the fuel tank.



Installing

The installation of the fuel delivery unit occurs in the reverse order. Pay attention to the following:

- Insert the fuel delivery unit into the fuel tank with the closing flange placed to the side. Do not bend the float arm of the fuel gauge sender unit - G- while doing so.
- Install the fuel delivery unit and the fuel line.
- Insert the new dry gasket ring for the flange into the opening of the fuel tank and moisten only from the inside with fuel for installing the closing flange.

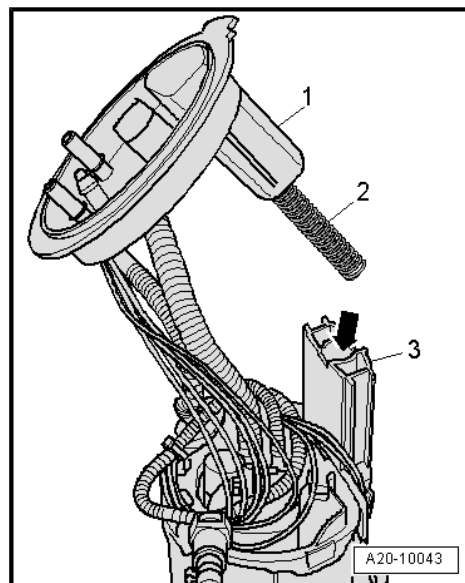


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Octavia II 2004 ➤ , Octavia II 2010 ➤ , Superb II 2008 ➤ , Superb II 20 ...
1.8/112; 118 kW; 2.0/147 kW TSI engine - Edition 06.2019

- Slide the spring -2- into the guide bore -arrow- and fit the cable -1- of the closing flange on the cable -3- of the fuel delivery unit.
- Press the closing flange down and bring it into the installation position.

Further information:



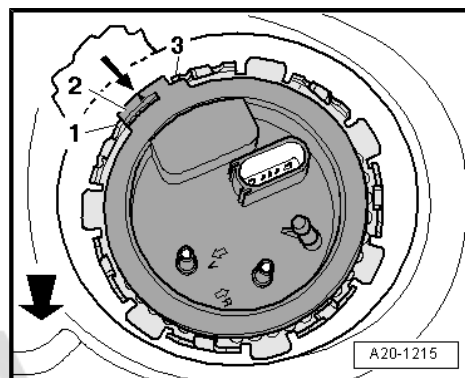
- ♦ Observe the fitting location of the fuel delivery unit. The peg -2- at the closing flange must be located between the pegs -1- and -3-. The -arrow- shows the direction of travel.
- ♦ Do not interchange feed line and return-flow line.
- ♦ Make sure the fuel lines fit tightly.
- ♦ After installing the fuel delivery unit, check whether the feed line and the return-flow line are still clipped in place on the fuel tank.

Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal. in whole, is not permitted
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- ♦ Fuel pump lock ring
⇒ ["1.2 Summary of components - fuel tank for vehicles with four-wheel drive", page 212](#) .

1.10 Removing and installing fuel pump for vehicles with four-wheel drive from MY 2009

Octavia II, Superb II, Yeti

Special tools and workshop equipment required

- ♦ Key - T10202-
- ♦ Protective gloves

Removing

Observe safety measures when working on the fuel system
⇒ ["2.1 Safety precautions when working on fuel supply system", page 3](#) .

Observe rules for cleanliness
⇒ ["3.1 Rules of cleanliness", page 6](#) .

- The fuel tank must not be more than $\frac{1}{3}$ full.

i Note

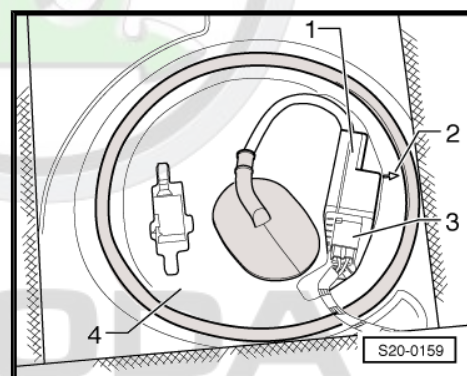
If necessary drain the fuel tank

⇒ *"1.5 Extract fuel from the fuel tank", page 219 .*

- Switch off ignition and all electrical loads, and pull out ignition key.
- Removing rear seat bench ⇒ Body Work; Rep. gr. 72 .
- Unclip cover -4- with the fuel pump control unit - J538- -1-.

Vehicles with auxiliary heating

- Disconnect the plug connection of the dosing pump - V54- .



Continued for all vehicles

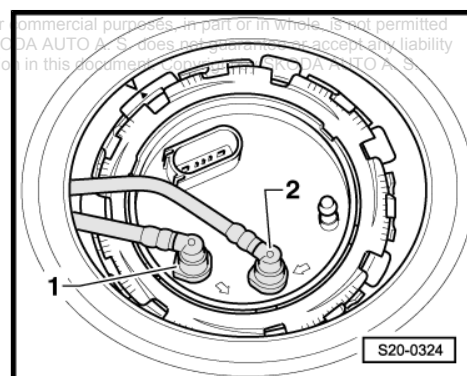
- Disconnect the plug as well as the black feed line -1- and the blue return-flow line -2- from the flange.

i Note

Press in the securing ring in order to unlock the line.

Vehicles with auxiliary heating

- Pull out the suction line for the dosing pump - V54- (slacken lower terminal).



Continued for all vehicles

- Open lock ring with the wrench - T10202- .

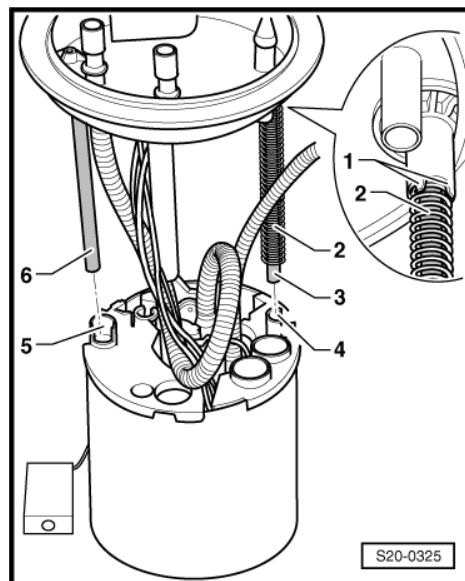




- Slightly raise the closing flange and check if the spring -2- is still fastened on the flange -1-.

If the spring -2- is loose on the guide pipe -3-, hold it with your fingers while removing the closing flange.

- Pull closing flange and gasket ring for fuel pump out of the opening of the fuel tank and place to the side with the connected lines.
- Remove the suction jet pump from the fuel gauge sender 2 - G169-
⇒ ["1.13 Removing and installing fuel gauge encoder 2 G169 with the suction jet pump", page 247](#) .



- Through the opening of the fuel tank, disconnect the fuel line -1- to the vacuum pump by pressing the release button.
- Disconnect the fuel delivery line -2- from the fuel delivery unit.



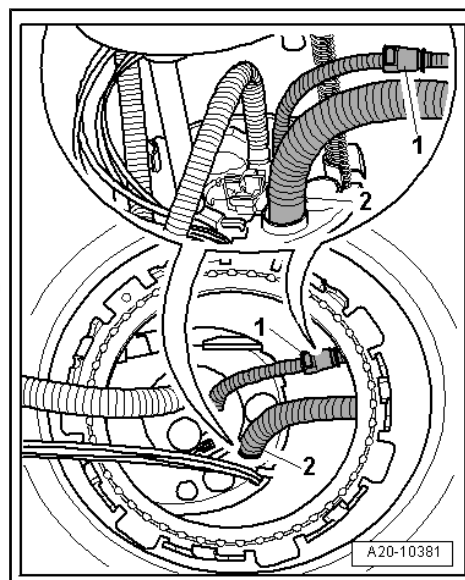
Note

- ◆ *You must wear protective gloves for removing the fuel delivery unit.*
- ◆ *Remove fuel pump from the fuel tank so that the electric cables and fuel hoses are not damaged and the float arm of the encoder for fuel gauge display - G- is not bent.*
- ◆ *You must empty the old delivery unit before disposing of it if you wish to replace the fuel delivery unit.*
- Pull the fuel delivery unit out of the opening of the fuel tank.

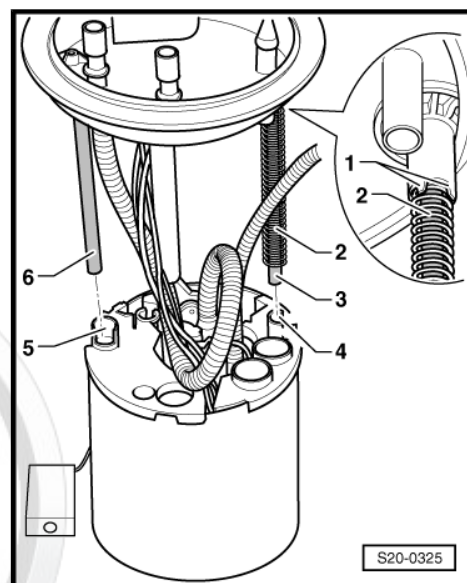
Installing

Installation is carried out in the reverse order. However, pay attention to the following:

- Insert the new dry gasket ring for the flange into the opening of the fuel tank and moisten only from the inside with fuel for installing the closing flange.
- Insert the fuel delivery unit into the fuel tank with the closing flange placed to the side. Do not bend the float arm of the fuel gauge sender unit - G- while doing so.
- Install the fuel delivery unit and the fuel line.



- The spring -2- must be fastened to the retaining lugs -1- of the closing flange.
- First of all guide the guide pipe -3- into the guide opening -4-.
- Then lower the closing flange in such a way that the guide pipe -6- locks into the guide bore -5-.



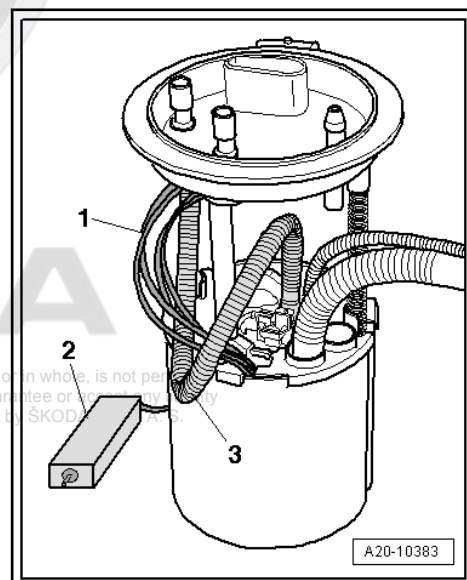
Note

Pay attention that the electrical cables -1- and the fuel feed line -3- are routed according to the illustration and the float arm -2- is not blocked.

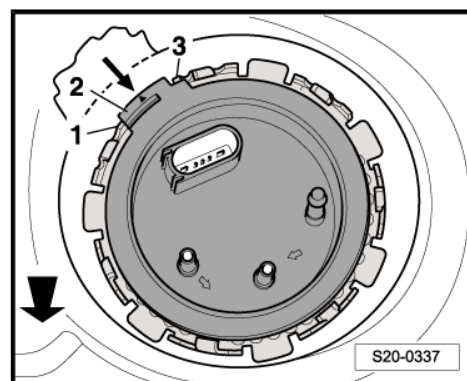
- Press the closing flange down and bring it into the installation position.

Further information:

- ♦ Fitting position of the fuel delivery unit: The peg -2- at the closing flange must be located between the pegs -1- and -3-. The -arrow- shows the direction of travel.



Superb II, Yeti





Octavia II

- ◆ After installing the fuel delivery unit, check whether the feed line and the return-flow line are still clipped in place on the fuel tank.
- ◆ Do not interchange feed line and return-flow line.
- ◆ Make sure the fuel lines fit tightly.
- ◆ After installing the fuel delivery unit, check whether the feed line and the return-flow line are still clipped in place on the fuel tank.

Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Fuel pump lock ring
⇒ [“1.2 Summary of components - fuel tank for vehicles with four-wheel drive”, page 212](#) .

1.11 Removing and installing the fuel gauge sender - G-



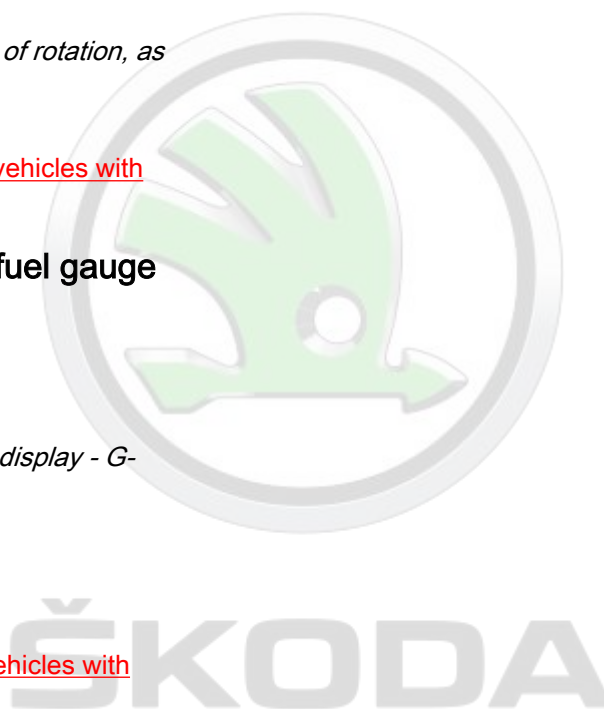
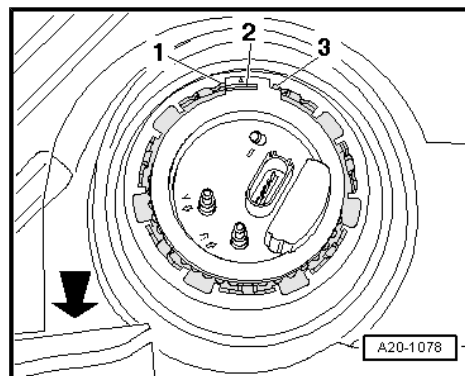
Note

There are two types of senders for the fuel gauge display - G-installed in the vehicles.

Fuel gauge sender - G- type one

Removing

- Remove fuel delivery unit
⇒ [“1.9 Removing and installing fuel pump for vehicles with four-wheel drive up to MY 2008”, page 230](#) .



- Unlatch and disconnect the plug connection of the lines -1- (brown), -2- (blue) and -3- (black).
- Raise retaining straps -4- and -5- with a screwdriver and remove the fuel gauge sender - - downwards -arrow-.

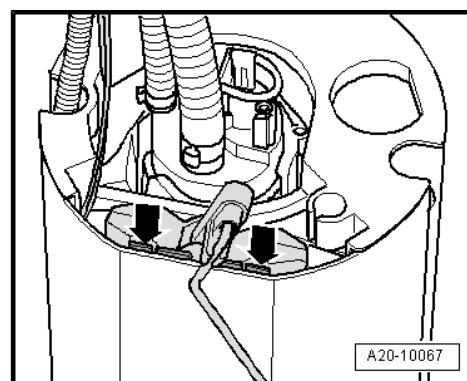
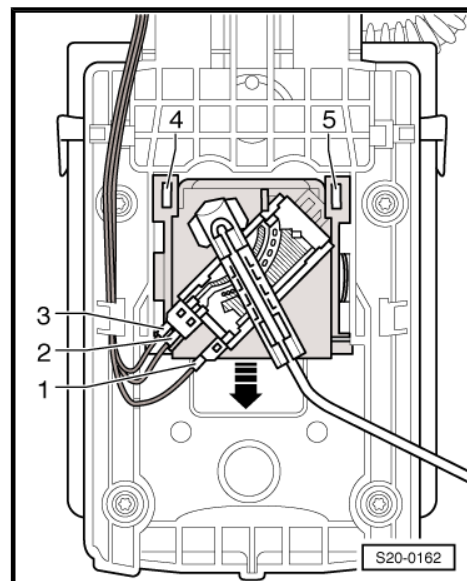
Installing

- Insert the fuel gauge sender - G- into the guides on the fuel delivery unit and press upwards until it engages.
- Connect the wiring and check correct installation of the plug.
- Install fuel delivery unit
⇒ [“1.9 Removing and installing fuel pump for vehicles with four-wheel drive up to MY 2008”, page 230](#) .

Fuel gauge sender - G- type two

Removing

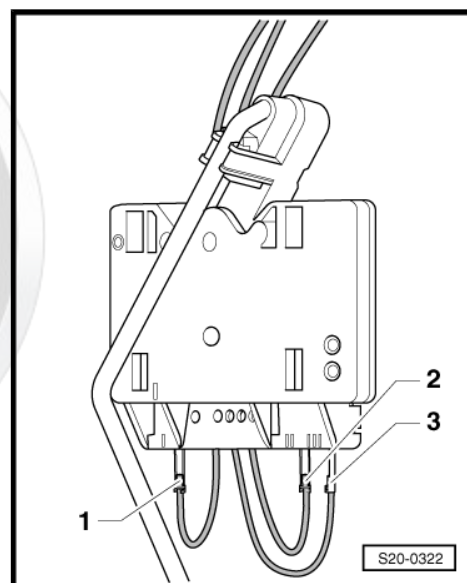
- Remove fuel delivery unit:
- ◆ Vehicles with front-wheel drive
⇒ [“1.8 Removing and installing fuel pump for vehicles with front-wheel drive”, page 227](#) .
- ◆ Vehicles with four-wheel drive
⇒ [“1.10 Removing and installing fuel pump for vehicles with four-wheel drive from MY 2009”, page 232](#) .
- Unlock the contact studs -arrows- using a screwdriver and pull out the sender for fuel gauge display - G- towards the top.



- Unlatch and disconnect the plug connection of the lines -1- (brown), -2- (blue) and -3- (black).

Installing

- Connect the wiring and check correct installation of the plug.
- Insert the fuel gauge sender - G- into the guides on the fuel delivery unit and press down until it engages.
- Install fuel delivery unit:
- ◆ Vehicles with front-wheel drive
⇒ [“1.8 Removing and installing fuel pump for vehicles with front-wheel drive”, page 227](#) .
- ◆ Vehicles with four-wheel drive
⇒ [“1.10 Removing and installing fuel pump for vehicles with four-wheel drive from MY 2009”, page 232](#) .





1.12 inspecting fuel pump

⇒ [“1.12.1 Inspect proper operation and power supply”, page 238](#)

⇒ [“1.12.2 Checking fuel pressure”, page 239](#)

⇒ [“1.12.3 Checking the holding pressure”, page 241](#)

⇒ [“1.12.4 Check fuel flow rate”, page 243](#)

⇒ [“1.12.5 Check power consumption”, page 246](#)

Special tools and workshop equipment required

- ◆ Key - T10202-
- ◆ Pressure gauge , e.g. -VAS 6550-
- ◆ Remote control , e.g. -V.A.G 1348/3A- with adapter cable , e.g. -V.A.G 1348/3-3-
- ◆ Voltage tester , e. g. -V.A.G 1527 B-
- ◆ Auxiliary measuring set, , e. g. -V.A.G 1594 C-
- ◆ Vehicle diagnosis, measurement and information system - VAS 505X-
- ◆ Measuring vessel

1.12.1 Inspect proper operation and power supply

Test conditions

- Battery voltage at least 11.5 V
- Fuel pump fuse O.K. ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- Fuel pump control unit - J538- OK.

Test sequence



Note

Function of fuel pump is checked using final control diagnosis.

- Switch on ignition and ⇒ Vehicle diagnostic tester connect.
- On the display, tap the buttons in sequence:
 - ◆ **01 - Vehicle self-diagnosis**
 - ◆ **01 - Engine electronics**
 - ◆ **03 - Actuator diagnosis**
- Tap the right arrow button  on display up to actuator diagnostics for fuel pump electronics.
- The fuel pump must now run slowly to the maximum speed.



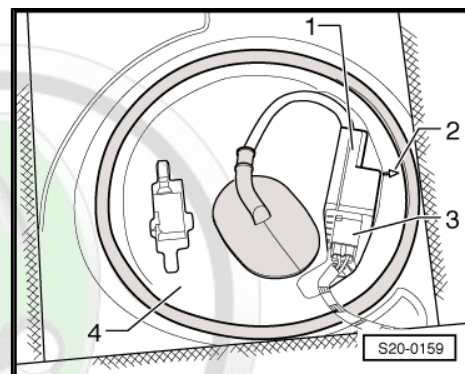
Note

The fuel pump runs very quietly.

- Switch off ignition.

The fuel pump does not run

- Removing rear seat bench ⇒ Body Work; Rep. gr. 72 .
- Disconnect plug -3- from fuel pump control unit - J538- .



- Testing the voltage supply with the voltage tester - V.A.G 1527B- between contact -1- and -6-.

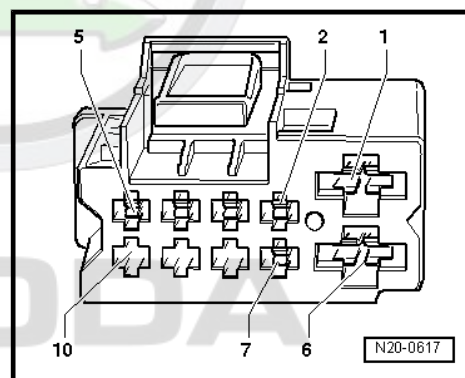
- The LED must light up.

The LED does not light up:

- Determine and remove open circuit in the wiring according to the current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

The LED lights up (power supply O.K.):

- Remove fuel delivery unit
⇒ [“1.10 Removing and installing fuel pump for vehicles with four-wheel drive from MY 2009”, page 232](#)
- Check that electrical wires between flange and fuel pump are connected.



If there is no open circuit in the wiring:

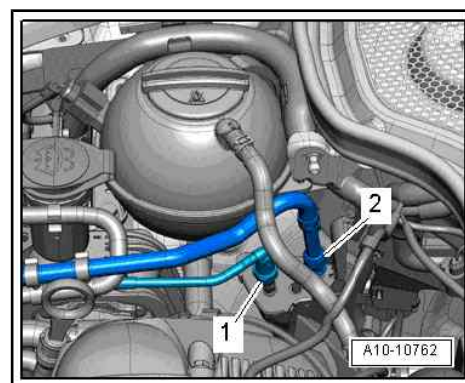
- Replace fuel delivery unit, this is faulty
⇒ [“1.10 Removing and installing fuel pump for vehicles with four-wheel drive from MY 2009”, page 232](#) .

1.12.2 Checking fuel pressure

Observe safety measures when working on the fuel system
⇒ [“2.1 Safety precautions when working on fuel supply system”, page 3](#) .

Observe rules for cleanliness
⇒ [“3.1 Rules of cleanliness”, page 6](#) .

- Remove high pressure pipe -2-
⇒ [“1.3 Separating push-on couplings”, page 215](#) .





- Connect the pressure gauge - VAS 6550- with adapters - VAS 6550/1- and -VAS 6550/2- to the fuel feed line.
- Make sure that the discharge cock is closed and the shut-off cocks are opened.
- Switch the ignition on and off so often until the fuel pressure on the pressure gauge no longer rises.
- Read off fuel pressure on pressure gauge.
- Specified value: 0.35 ... 0.7 MPa (3.5 ... 7 bar)

If the fuel line is OK:

- Test holding pressure
⇒ ["1.12.3 Checking the holding pressure", page 241](#) .

If the set value is exceeded

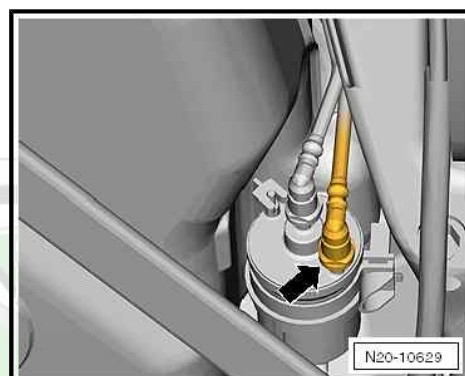
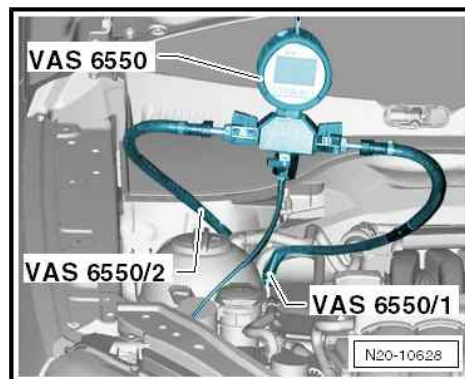
- Check the return line between the fuel filter and fuel pump for kinks and blockages.

If no fault is found:

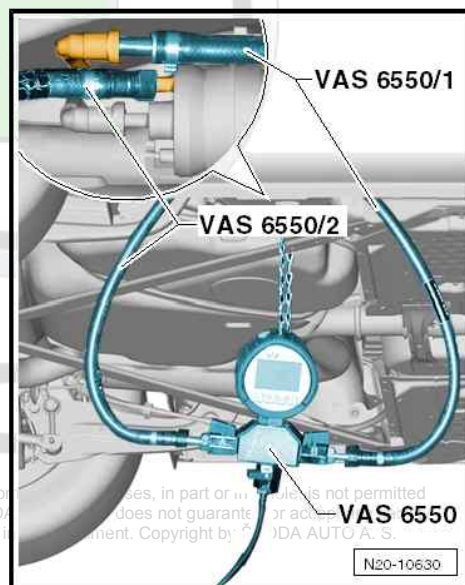
- Pressure limiting valve in the fuel filter defective, replace the fuel filter.

If the measurement is less than the specification

- Check the fuel pressure before the fuel filter, to do so proceed as follows:
- Disconnect fuel feed line -arrow- at fuel filter.



- Connect the pressure gauge - VAS 6550- with the adapter - VAS 6550/1- and -VAS 6550/2- between the fuel filter and the fuel feed line.
- Make sure that the discharge cock is closed and the shut-off cocks are opened.
- Start engine and run in idle.



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- Slowly close the shut-off tap -A-.
- The pressure must rise to at least 0,7 MPa (7 bar).

If the 0.7 MPa (7 bar) is reached, immediately open the shut-off cock again!

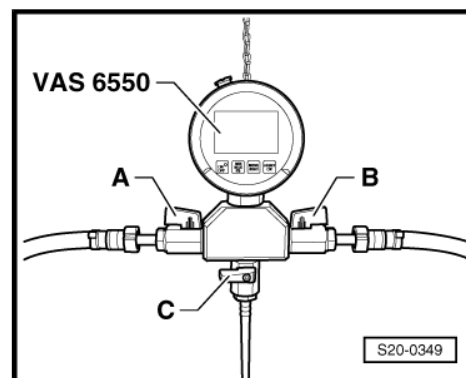
If pressure has risen:

- Replace fuel filter.

Fuel pump O.K., pressure limiting valve in the fuel filter defective.

If pressure does not rise:

- Replace fuel delivery unit, this is faulty
⇒ [“1.10 Removing and installing fuel pump for vehicles with four-wheel drive from MY 2009”, page 232](#) .

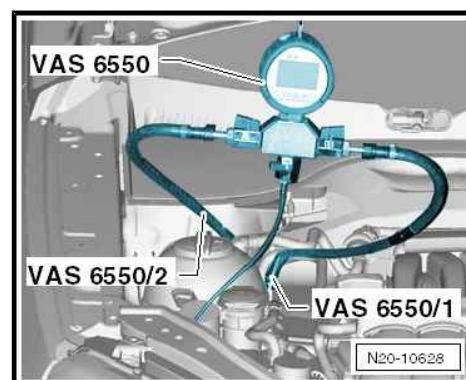


1.12.3 Checking the holding pressure

- Fuel pressure O.K. and pressure gauge - VAS 6550- connected in the engine compartment
⇒ [“1.12.2 Checking fuel pressure”, page 239](#) .
- Switch the ignition on and off so often until the fuel pressure on the pressure gauge no longer rises.
- Read off fuel pressure on pressure gauge.
- Specified value: 0.35 ... 0.7 MPa (3.5 ... 7 bar)
- Observe pressure drop at pressure gauge.
- The pressure must not drop below 0.3 MPa (3 bar) after 10 minutes.

If the pressure drops again

- Switch the ignition on and off so often until the fuel pressure on the pressure gauge does no longer rise.



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- Immediately close the shut-off cock -B- of the pressure gauge after the pressure has built up. The lever is then at right angle to direction of flow.

If the pressure does not drop now



Note

Search for leak on engine side. Repeat holding pressure check. However, this time shut-off valve -A- is closed to determine, whether there is a leak on the engine side.

- Check the low-pressure line to the high pressure pump for tightness.

If no fault is found:

- Replace high pressure pump
⇒ [“4.2 Removing and installing the high pressure pump”, page 311](#).

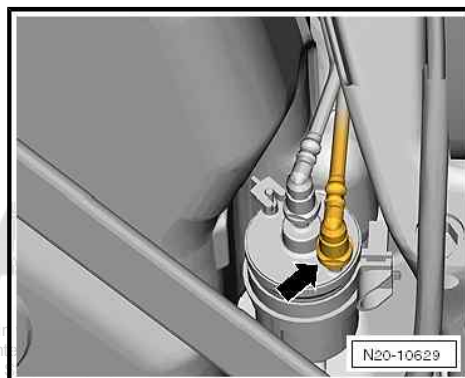
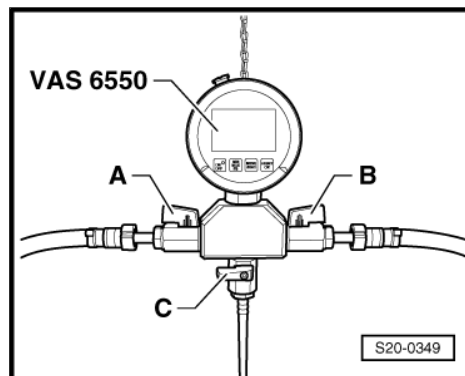
If the pressure drops again

Leak must be sought on fuel tank side; proceed as follows:

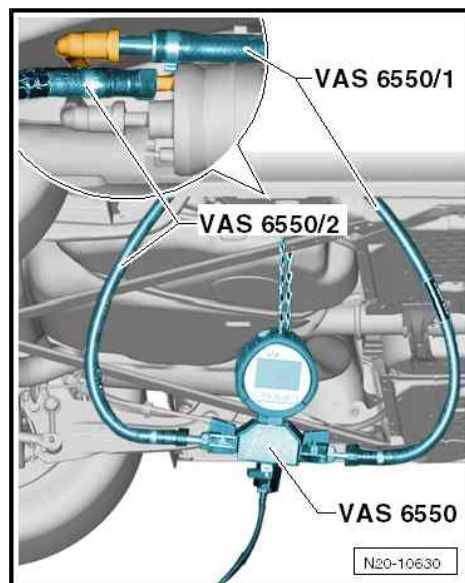
- Check the fuel line to the fuel filter for tightness.

If the fuel line is not found to be faulty:

- Check the pressure holding valve in the fuel delivery unit. To do so proceed in the following manner:
- Disconnect fuel feed line -arrow- at fuel filter.



- Connect the pressure gauge - VAS 6550- with the adapter - VAS 6550/1- and -VAS 6550/2- between the fuel filter and the fuel feed line.
- Make sure that the discharge cock is closed and the shut-off cocks are opened.
- Switch the ignition on and off so often until the fuel pressure on the pressure gauge does no longer rise.
- Read off fuel pressure on pressure gauge.
- Specified value: 0.35 ... 0.7 MPa (3.5 ... 7 bar)



After the pressure has built up, close the shut-off cock -A-.

- Observe pressure drop at pressure gauge.
- The pressure must not drop below 0.3 MPa (3 bar) after 10 minutes.

If pressure drops:

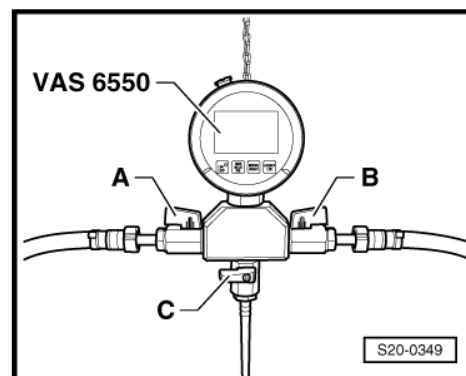
- Replace fuel pump
⇒ [“1.10 Removing and installing fuel pump for vehicles with four-wheel drive from MY 2009”, page 232](#) .

The safety valve in the fuel pump is defective.

If the pressure does not drop:

- Replace fuel filter.

The pressure limiting valve in the fuel filter is faulty.

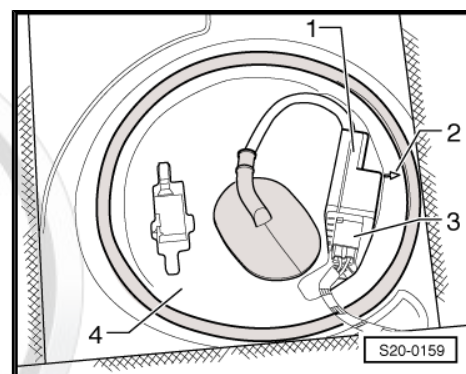


1.12.4 Check fuel flow rate

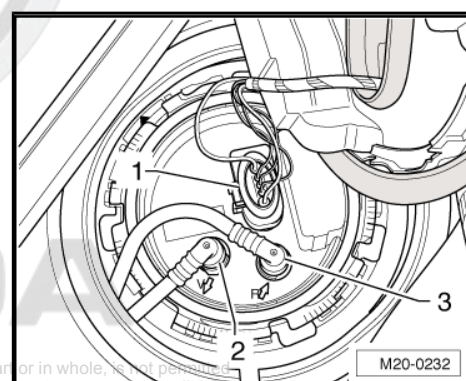
Observe safety measures when working on the fuel system
⇒ [“2.1 Safety precautions when working on fuel supply system”, page 3](#) .

Observe rules for cleanliness
⇒ [“3.1 Rules of cleanliness”, page 6](#) .

- Switch off ignition and all electrical loads, and pull out ignition key.
- Removing rear seat bench ⇒ Body Work; Rep. gr. 72 .
- Unclip cover -4- with the fuel pump control unit - J538- -1-.



- Pull on the plug -1- without pressing the latch and check that it fits tightly. If the plug was not correctly plugged in, it may have caused a fault.
- Disconnect plug connection -1-.
- Check contacts on plug and on fuel pump for damage.



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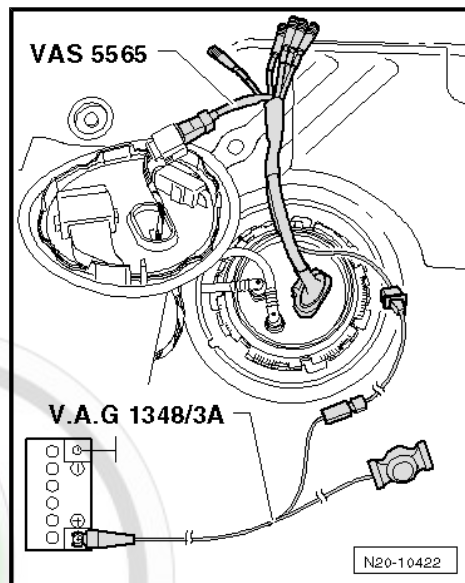


- Connect the test instrument adapter/DSO (5-pin) - VAS 5565- to the plug and to the fuel delivery unit.
- Connect the remote control - V.A.G 1348/3A- to the adapter - VAS 5565- and to battery positive (+).

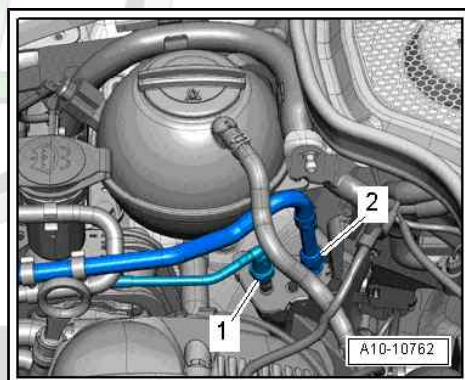


Note

This step is only intended to ensure that the fuel pump runs when the engine is switched off.



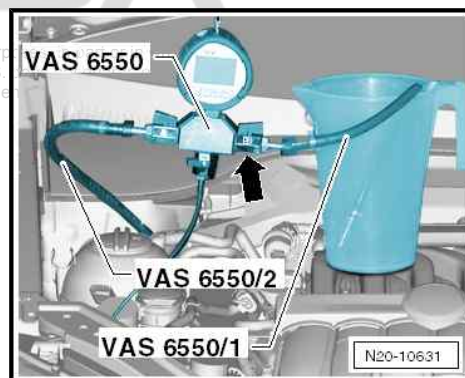
- Remove high pressure pipe -2-
⇒ [“1.3 Separating push-on couplings”, page 215](#) .



- Connect pressure gauge - VAS 6550- to fuel supply line with adapter - VAS 6550/2- . Hold adapter - VAS 6550/1- in a measuring vessel.
- Make sure that the discharge cock is closed and the shut-off cocks are opened.

CAUTION

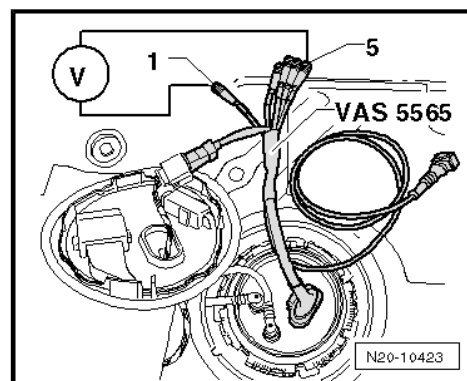
Danger of liquid spraying out when opening the shut-off valve. Wear safety goggles and safety clothing, in order to avoid injuries and skin contact with fuel. Hold the container in front of the free connection to the pressure gauge.



- Operate remote control - V.A.G 1348/3A- . While doing this, slowly close the shut-off cock -arrow- until the pressure gauge displays 0,4 MPa (4 bar) overpressure. From this point on do not move position of shut-off tap.
- Empty measuring glass.

The fuel delivery of the fuel pump is dependent on the battery voltage. For this reason, additionally connect the multimeter - V.A.G 1715- to the outgoing circuits -1- and -5- of the adapter for measuring method/DSO (5-pin) - VAS 5565- .

- Operate remote control for 30 seconds, whilst measuring voltage at fuel pump.



- Compare the delivered fuel rate with the specified value:

*) Minimum fuel flow rate in $\text{cm}^3/30 \text{ s}$

**) Voltage at the fuel pump when engine is not running and pump is operating.

Read out examples:

During the test a voltage of 10.5 V was measured. Thus a minimum fuel flow rate of $580 \text{ cm}^3/30 \text{ s}$ is obtained.

If the minimum fuel delivery volume is not reached:

- Check fuel lines for possible restrictions (kinks) or blockages.

If no fault is found:

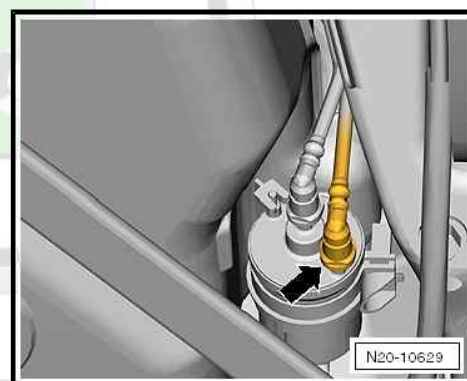
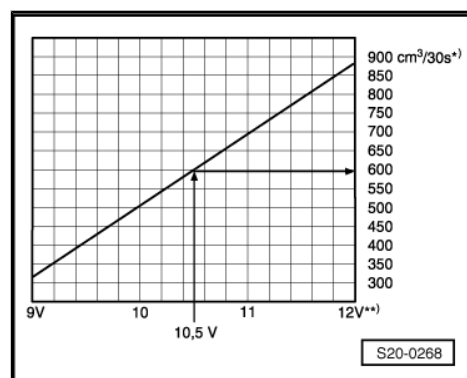
- Take cap off fuel filler neck and repeat the test.

If the fuel flow rate is now reached:

- Check the ventilation of the fuel tank.

If the minimum fuel flow rate is again not reached:

- Check the fuel filter, to do so proceed as follows:
- Disconnect fuel feed line -arrow- at fuel filter.





- Connect pressure gauge - VAS 6550- to fuel supply line with adapter - VAS 6550/1- . Hold adapter - VAS 6550/2- in a measuring vessel.
- Make sure that the discharge cock is closed and the shut-off cocks are opened.
- Repeat delivery rate check.

If the minimum fuel flow rate is now reached:

- Replace fuel filter.

If the minimum fuel flow rate is again not reached:

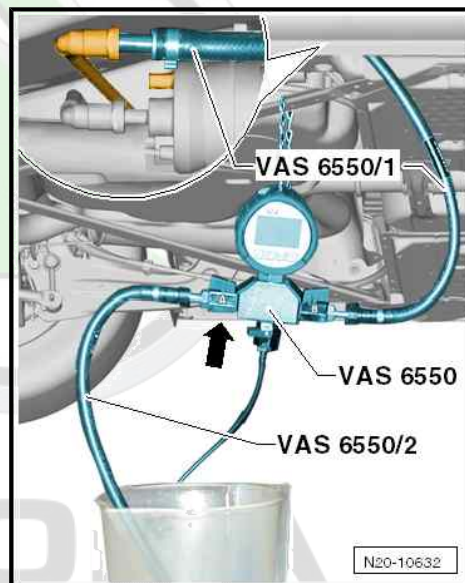
- Remove fuel delivery unit and inspect the filter strainer for soiling.

Only if no fault has yet been detected:

- Replace fuel pump
⇒ ["1.10 Removing and installing fuel pump for vehicles with four-wheel drive from MY 2009", page 232](#) .

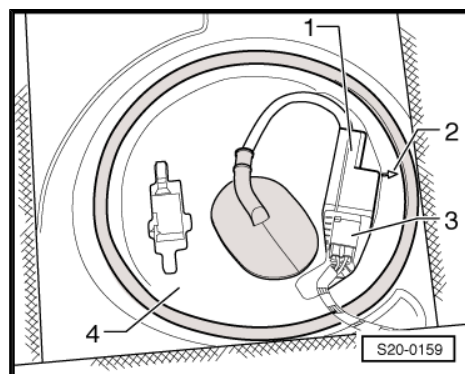
If the required fuel delivery volume has been achieved, but a fault is still suspected in the fuel supply system (e.g. intermittent breakdown of the fuel supply).

- Check current consumption of fuel delivery unit
⇒ ["1.12.5 Check power consumption", page 246](#) .



1.12.5 Check power consumption

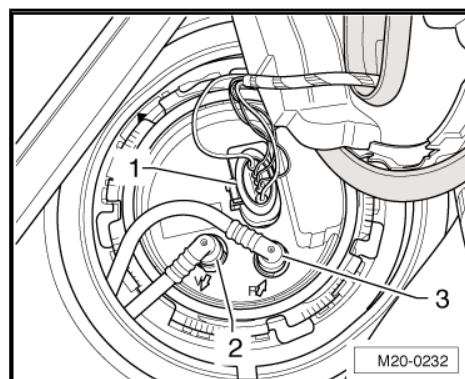
- Fold up rear seat.
- Unclip cover -4- with the fuel pump control unit - J538- -1-.



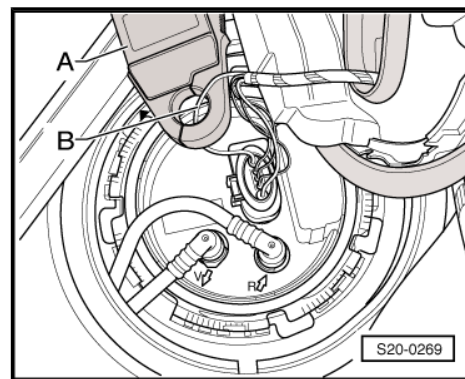
- Pull on the plug -1- without pressing the latch and check that it fits tightly. If the plug was not correctly plugged in, it may have caused a fault.
- Disconnect plug connection -1-.
- Check contacts on plug and on fuel pump for damage.

If no damage was detected:

- Put plug -1- back into place.



- Connect the current probe -A- of the vehicle diagnosis, measurement and information system - VAS 505X- on the line -B- to contact 1 of the 5-pin plug.



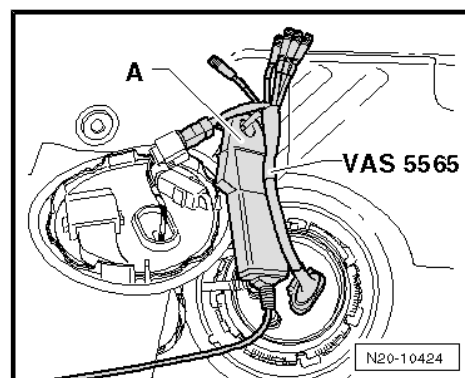
If the current clamp can be connected because of the insulation length on the line -B-

- Connect the test instrument adapter/DSO (5-pin) - VAS 5565- to the plug and to the fuel delivery unit.
- Connect the current probe -A- on the red cable - with the inscription "current probe" - of the adapter for measuring method/DSO (5-pin) - VAS 5565- .

Continued

- Start engine and run in idle.
- Measure current draw of fuel pump.

Set value: max. 9 A



Note

If the fault in the fuel supply system is intermittent then tests can be undertaken during a test drive but then two people are required for this.

If the specified current uptake is exceeded:

- Replace fuel delivery unit, this is faulty
⇒ "1.10 Removing and installing fuel pump for vehicles with four-wheel drive from MY 2009", page 232 .

1.13 Removing and installing fuel gauge encoder 2 - G169- with the suction jet pump

Special tools and workshop equipment required

- ◆ Key - T10202-

Safety precautions when working on the fuel supply system
⇒ "2.1 Safety precautions when working on fuel supply system", page 3 .

Observe rules for cleanliness
⇒ "3.1 Rules of cleanliness", page 6 .

- The fuel tank must not be more than $\frac{1}{3}$ full.



Note

*If necessary, extract fuel from the fuel tank
⇒ "1.5 Extract fuel from the fuel tank", page 219 .*



On vehicles with four-wheel drive, the fuel tank consists of a left and right chamber. In order to pump the fuel out of the left chamber -3- of the fuel tank into the right chamber to the housing of the delivery unit -2-, a suction jet pump -1- is required.

The version of the fuel tank requires that the fuel is pumped from the area of the fuel gauge sender 2 - G169- with a suction jet pump to the fuel delivery unit.

A check is only to be carried out, if the engine stops because of fuel shortage, although the fuel gauge still indicates a fuel tank which is $\frac{1}{4}$ full.

Make sure that the float arm of the fuel gauge sender 2 - G169- is not bent.

- Check that the fuel lines on the suction spray pump are fitted on firmly and not damaged and that the suction spray pump is not soiled.

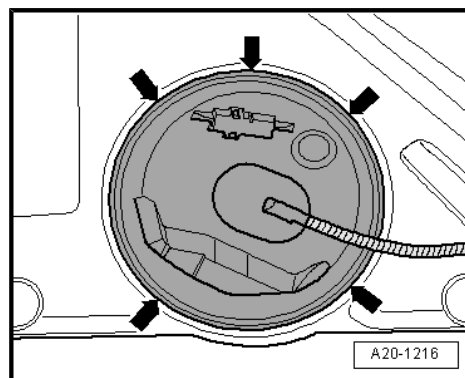
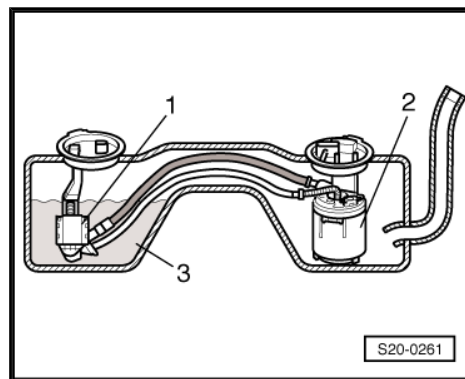
Removing

- Remove fuel delivery unit:

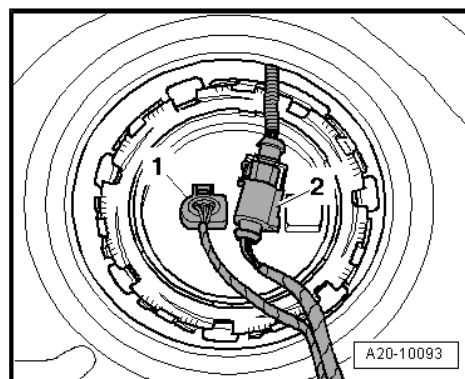
- ◆ For vehicles up to MY 2008
⇒ ["1.9 Removing and installing fuel pump for vehicles with four-wheel drive up to MY 2008", page 230](#)

- ◆ For vehicles from MY 2009
⇒ ["1.10 Removing and installing fuel pump for vehicles with four-wheel drive from MY 2009", page 232](#)

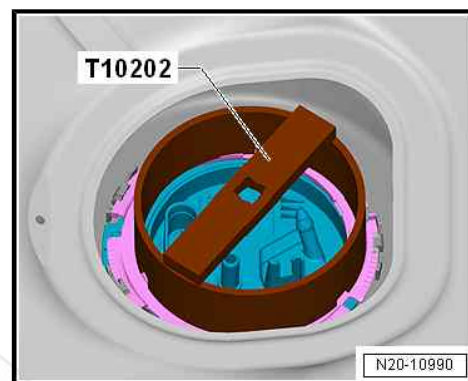
- Remove cover of assembly opening on left.



- Disconnect plug connection -1-.
- Take the electrical connector -2- from the mounting bracket and expose the cable.



- Open lock ring with the wrench - T10202- .
- Pull fuel gauge sender 2 - G169 - together with suction jet pump out of the fuel tank opening.
- Remove gasket ring.

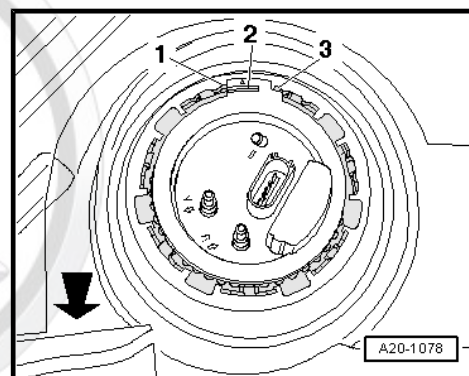


Installing



When installing do not bend the float arm of the fuel gauge transmitter 2 - G169 - .

- Insert fuel gauge sender 2 - G169- into the fuel tank.
- Position the suction jet pump in the interior of the fuel tank onto the sender. The catches must click audibly.
- Insert new dry gasket ring for the flange into the opening of the fuel tank and only now moisten the inside (position of the flange) with fuel.
- Check fitting position for fuel gauge sender 2 - G169-
⇒ Fig. [“Fitting position of the flange of the fuel delivery unit and the fuel gauge sender 2 -G169- ”](#), page 215 .
- Check correct positioning of sealing ring.
- Tighten lock ring with wrench for union nut - T10202- .
- Mount plug.
- Install cover.
- Install rear seat bench ⇒ Body Work; Rep. gr. 72 .



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Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Lock ring for Fuel gauge encoder 2 - G169-
⇒ [“1.2 Summary of components - fuel tank for vehicles with four-wheel drive”](#), page 212 ,



2 Accelerator control

⇒ [“2.1 Assembly overview - accelerator module”, page 250](#)

⇒ [“2.2 Removing and installing accelerator pedal module”, page 250](#)

⇒ [“2.3 Disconnect connector for accelerator pedal module and fit on”, page 252](#)

2.1 Assembly overview - accelerator module

1 - Connector

- ☐ disconnect and fit on
⇒ [“2.3 Disconnect connector for accelerator pedal module and fit on”, page 252](#)

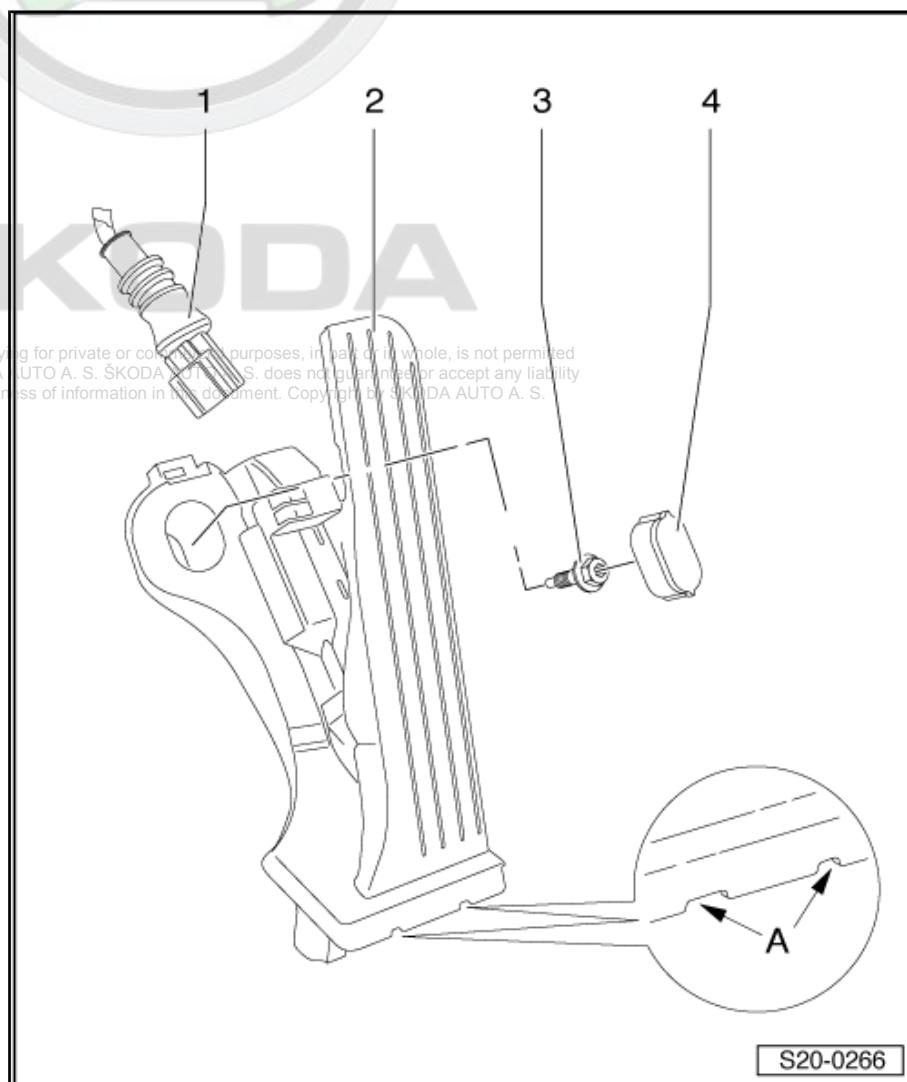
2 - Accelerator pedal module

- ☐ with accelerator pedal position encoder - G79- and accelerator pedal position encoder 2 - G185
- ☐ for vehicles with automatic gearbox with kick-down switch
- ☐ not adjustable
- ☐ -A- openings for the release tool
- ☐ Removing and installing
⇒ [“2.2 Removing and installing accelerator pedal module”, page 250](#)
- ☐ After replacing in vehicles with automatic gearbox, adjust the engine and gearbox control unit ⇒ Vehicle diagnostic tester

3 - Screw

- ☐ 10 Nm

4 - Cover



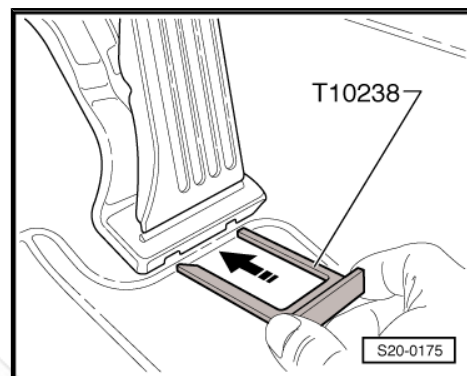
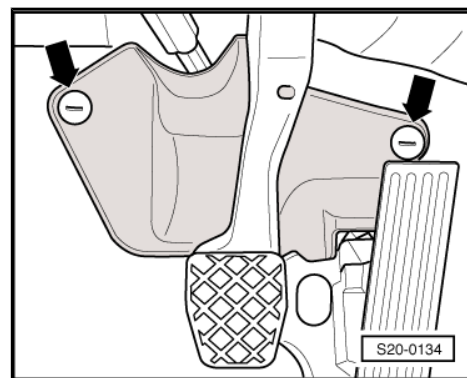
2.2 Removing and installing accelerator pedal module

Special tools and workshop equipment required

- ◆ Release tool - T10238- (for left-hand drive vehicle)
- ◆ Release tool - T10240- (for right-hand drive vehicle)

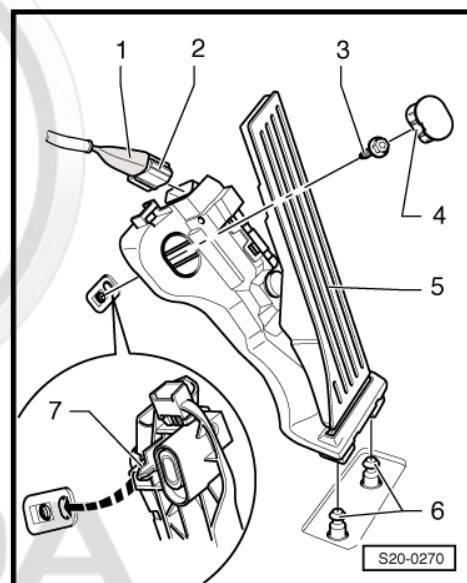
Removing

- Remove steering column trim panel -arrows-.
- Lever out the cap
(⇒ [“2.1 Assembly overview - accelerator module”, page 250](#), Pos. -4-) with a screwdriver.
- Unscrew fixing screw
(⇒ [“2.1 Assembly overview - accelerator module”, page 250](#), Pos. -3-).
- Push the release tool - T10238- (for right-hand drive release tool - T10240-) as shown up to the stop into the provided openings and remove the accelerator pedal module.
- Disconnect connector at accelerator pedal module
⇒ [“2.3 Disconnect connector for accelerator pedal module and fit on”, page 252](#) .



Installing

- Fit the plug -2- onto the accelerator pedal module -5-
⇒ [“2.3 Disconnect connector for accelerator pedal module and fit on”, page 252](#) .
- Push accelerator pedal module onto the securing bolt -6-.
- Insert the centering pin -7- into the hole in the underbody.
- Screw on accelerator pedal module with screw -3- and fit on cap -4-.
- Re-install steering column trim panel.
- If the accelerator pedal module was replaced on vehicles with automatic gearbox, the engine control unit must be adapted
⇒ Vehicle diagnostic tester.



Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal. SKODA AUTO A. S. does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by SKODA AUTO A. S.

- ◆ Accelerator pedal module
⇒ [“2.1 Assembly overview - accelerator module”, page 250](#) .



2.3 Disconnect connector for accelerator pedal module and fit on



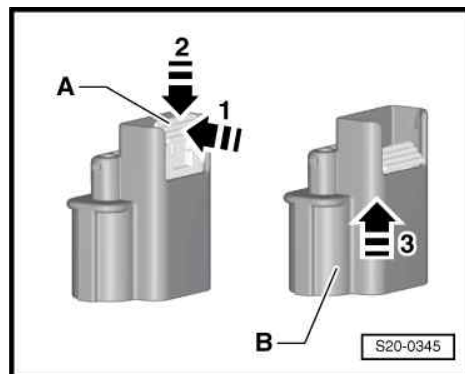
Note

The plugs for the accelerator pedal module which are inserted, must be disconnected and fit on in a different manner.

Disconnect connector 1K0 973 706

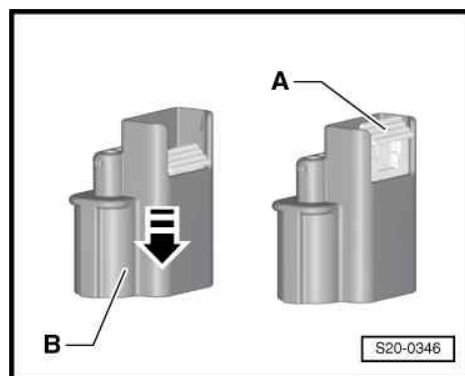
- Slightly press the piston slide valve -A- (grey) in direction of arrow -1- and push it up to the stop in direction of arrow -2-.
- Hold the piston slide valve in this position and disconnect the socket housing -B- towards the top in direction of arrow -3-.

The piston slide valve -A- remains in the bottom position.



Fit on connector 1K0 973 706

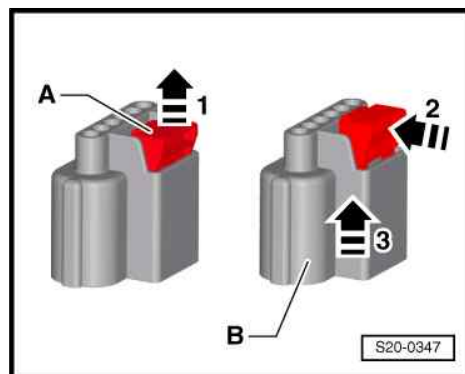
- Push the socket housing -B- down in -direction of arrow- until the housing can be heard to lock in place.
- The piston slide valve -A- moves automatically upwards.
- For safety reasons, check the connector for secure catch by tightening it in the opposite direction.



Disconnect connector 8K0 973 706

- Pull piston slide valve -A- (red) upwards in direction of arrow -1- up to the stop.
- Press the piston slide valve in direction of arrow -2- and disconnect the socket housing -B- upwards in direction of arrow -3-.

The piston slide valve -A- remains in the top position.

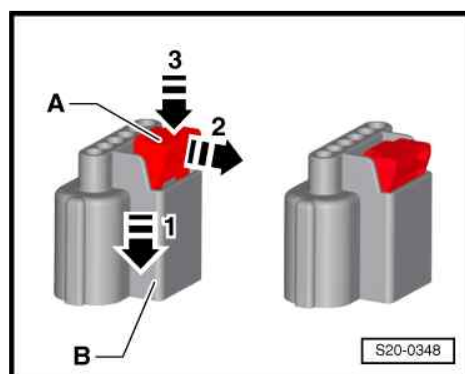


Fit on connector 8K0 973 706

- Push the socket housing -B- down in direction of arrow -1- up to the stop.
- Slightly push the piston slide valve in -direction of arrow 2- and slide it downwards in -direction of arrow 3-.

The piston slide valve -A- can only be pushed downwards if the socket housing was pushed downwards »up to the stop«.

- For safety reasons, check the connector for secure catch by tightening it in the opposite direction.



3 Activated charcoal filter system

⇒ [“3.1 Assembly overview - activated charcoal filter system”, page 253](#)

⇒ [“3.2 Checking the fuel tank venting”, page 254](#)

3.1 Assembly overview - activated charcoal filter system



Note

- ◆ Hose connections are secured with either spring-type or clamp-type clips.
- ◆ Renew clamp-type clips with spring-type clips.
- ◆ Spring-type clip pliers are recommended for installation of spring-type clips.

1 - Activated charcoal filter

- ☐ Fitting position: in right of engine compartment
- ☐ if the catch peg is unlocked, the activated charcoal filter can be removed from the holder
- ☐ Checking the fuel tank venting
⇒ [“3.2 Checking the fuel tank venting”, page 254](#)

2 - Pressure holding valve with connection hose

3 - Screw

- ☐ 8 Nm

4 - Connecting hose

- ☐ check correct fitting
- ☐ press in the securing ring for separation

5 - from fuel tank

6 - Nut

- ☐ 8 Nm

7 - Screw

- ☐ 5 Nm

8 - Mounting bracket

- ☐ for activated charcoal filter

9 - from exhaust turbocharger

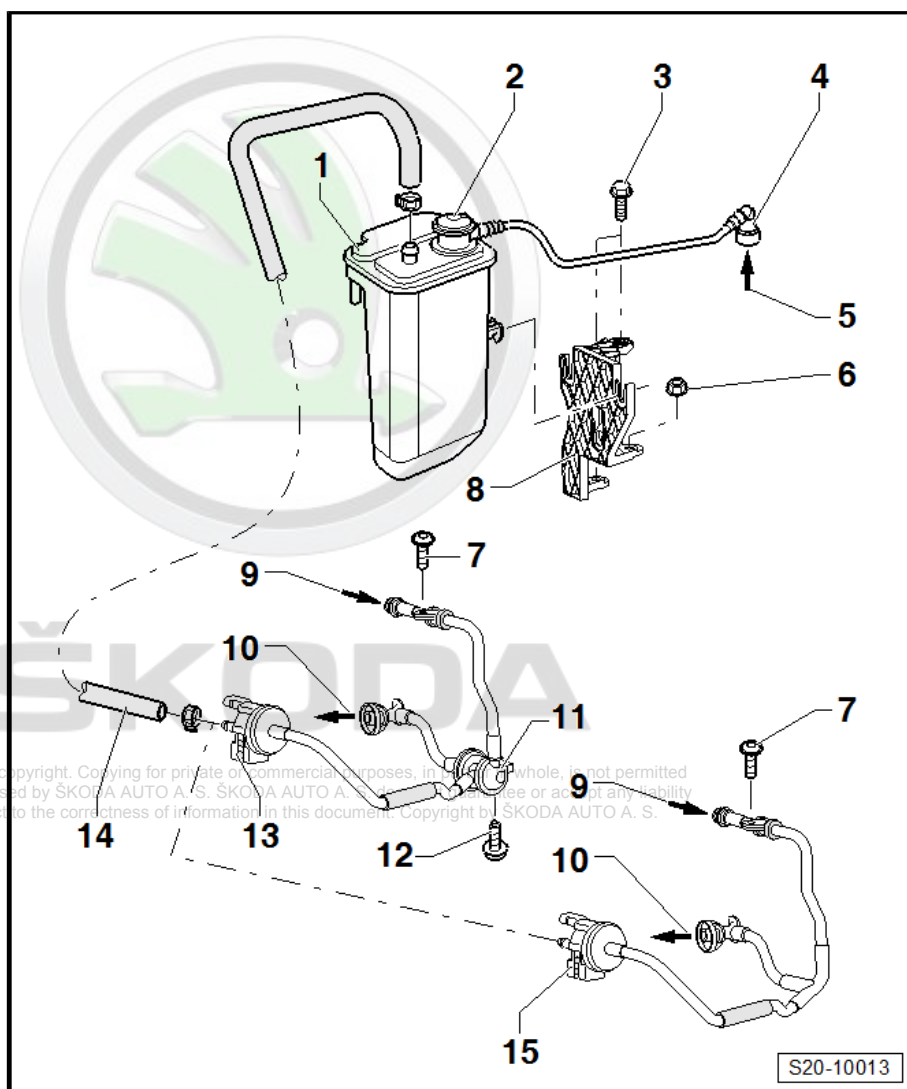
10 - To intake manifold

11 - Double non-return valve

- ☐ version assembled up to 11.2010
- ☐ attached to intake manifold ⇒ [“2.1 Assembly overview - intake manifold”, page 289](#)
- ☐ with electrical solenoid valve 1 for activated charcoal filter - N80- one building unit

12 - Screw

- ☐ 12 Nm





13 - activated charcoal filter solenoid valve 1 - N80-

- ☐ version assembled up to 11.2010
- ☐ with air bleed valve
- ☐ Valve closed when the ignition is switched off
- ☐ valve is actuated (pulsed) by engine control unit when engine is warm
- ☐ attached to intake manifold ⇒ [“2.1 Assembly overview - intake manifold”, page 289](#)
- ☐ with double non-return valve, one building unit

14 - Connecting hose

15 - activated charcoal filter solenoid valve 1 - N80-

- ☐ version assembled from 11.2010
- ☐ with air bleed valve
- ☐ Valve closed when the ignition is switched off
- ☐ valve is actuated (pulsed) by engine control unit when engine is warm
- ☐ attached to intake manifold ⇒ [“2.1 Assembly overview - intake manifold”, page 289](#)

3.2 Checking the fuel tank venting

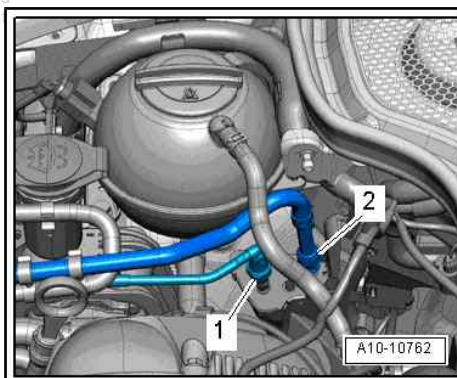
Special tools and workshop equipment required

- ◆ Hand vacuum pump , e.g. -V.A.S 6213-
- ◆ Pressure gauge - VAS 6550-
- ◆ Adapter - VAS 6550/3-1-

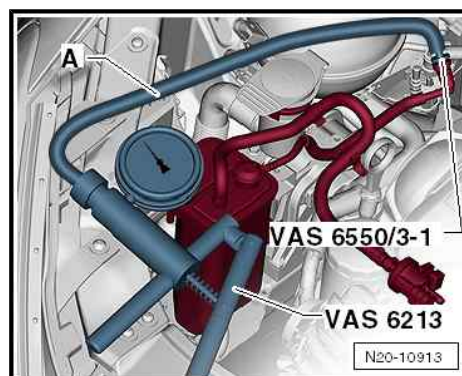
Observe safety measures when working on the fuel system
⇒ [“2.1 Safety precautions when working on fuel supply system”, page 3](#) .

Observe rules for cleanliness
⇒ [“3.1 Rules of cleanliness”, page 6](#) .

- Ignition must be switched off.
- Detach vent line -1-
⇒ [“1.3 Separating push-on couplings”, page 215](#) .



- Connect the hand vacuum pump - V.A.S 6213- with the adapter - VAS 6550/3-1- to the vent pipe to the activated charcoal filter.



- Put the sliding ring -1- of the hand vacuum pump - V.A.S 6213- in position -A- for “vacuum”.
- Operate the hand vacuum pump - V.A.S 6213- several times.
- Vacuum must not build up.

If vacuum builds up:

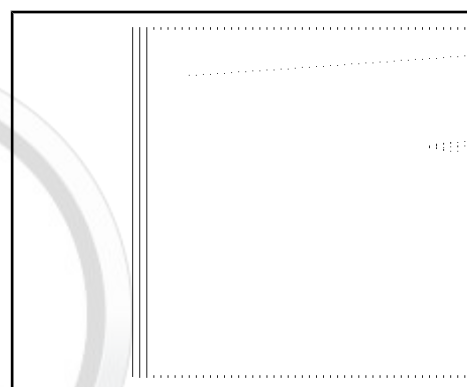
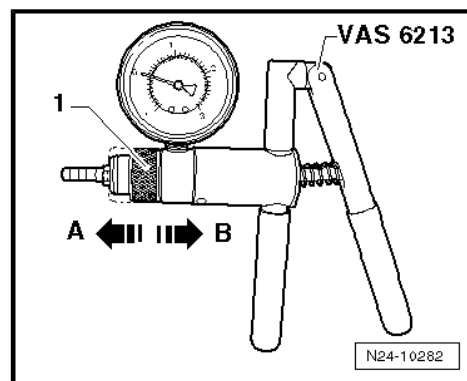
- Check the breather fitting on the activated charcoal filter for dirt and clean as required.

If vacuum does not build up:

- Block admission fitting -arrow- and once again operate the hand vacuum pump several times. Vacuum must build up.

If vacuum does not build up:

- Replace activated charcoal filter.



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21 – Turbocharging/supercharging

1 Exhaust gas turbocharger

⇒ [“1.1 Summary of components - exhaust gas turbocharger”,
page 256](#)

⇒ [“1.2 Removing and installing exhaust gas turbocharger”,
page 262](#)

⇒ [“1.3 Check proper operation of pressure box for turbocharger”,
page 267](#)

⇒ [“1.4 Removing and installing the exhaust gas turbocharger
vacuum unit”, page 268](#)

⇒ [“1.5 Adjusting exhaust turbocharger pressure box”, page 269](#)

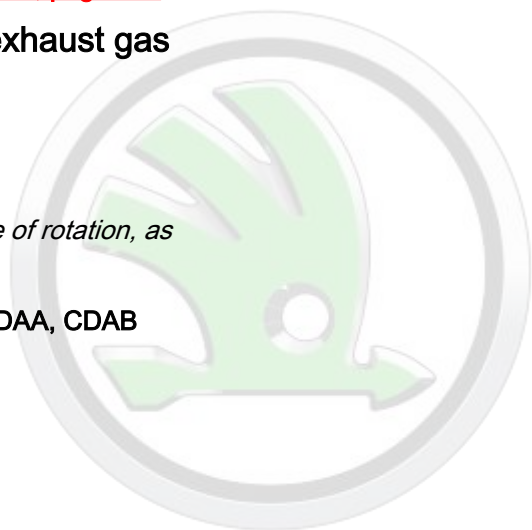
1.1 Summary of components - exhaust gas turbocharger



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

Part 1 for engine identification characters BZB, CDAA, CDAB



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1 - Exhaust gas turbocharger

- ☐ can only be replaced with exhaust manifold and pressure box
- ☐ Removing and installing
⇒ ["1.2 Removing and installing exhaust gas turbocharger", page 262](#)

2 - to the activated charcoal filter system

3 - Turbocharger pressure box

- ☐ Inspect proper operation
⇒ ["1.3 Check proper operation of pressure box for turbocharger", page 267](#)
- ☐ Removing and installing
⇒ ["1.4 Removing and installing the exhaust gas turbocharger vacuum unit", page 268](#)
- ☐ Adjust
⇒ ["1.5 Adjusting exhaust turbocharger pressure box", page 269](#)

4 - Sealing ring

- ☐ replace

5 - Connection fitting

6 - Hollow screw

- ☐ 8 Nm

7 - Hose

8 - Hose

9 - Screw

- ☐ 3 Nm

10 - Solenoid valve for charge pressure control - N75-

11 - Hose

12 - Locking clip

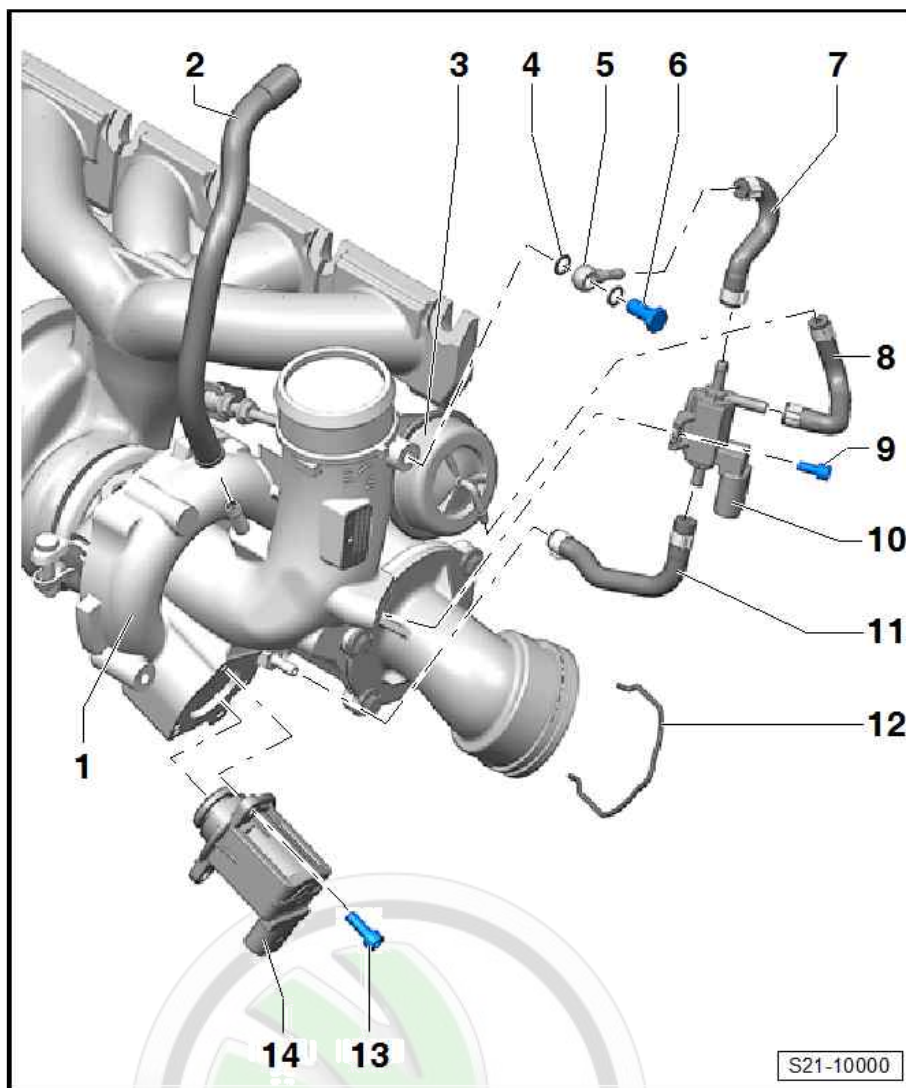
- ☐ replace

13 - Screw

- ☐ 7 Nm

14 - Turbocharger divert air valve - N249-

- ☐ with integrated sealing ring
- ☐ pay attention to correct installation position
⇒ [Fig. "Fitting position of the turbocharger divert air valve -N249- ", page 258](#)



Part 1 for engine identification characters CCZA

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1 - Exhaust gas turbocharger

- ☐ can only be replaced with exhaust manifold and pressure box
- ☐ Removing and installing
⇒ ["1.2 Removing and installing exhaust gas turbocharger"](#), page 262

2 - to the activated charcoal filter system

3 - Turbocharger pressure box

- ☐ Inspect proper operation
⇒ ["1.3 Check proper operation of pressure box for turbocharger"](#), page 267

4 - Hose

5 - Hose

6 - Screw

- ☐ 3 Nm

7 - Solenoid valve for charge pressure control - N75-

8 - Hose

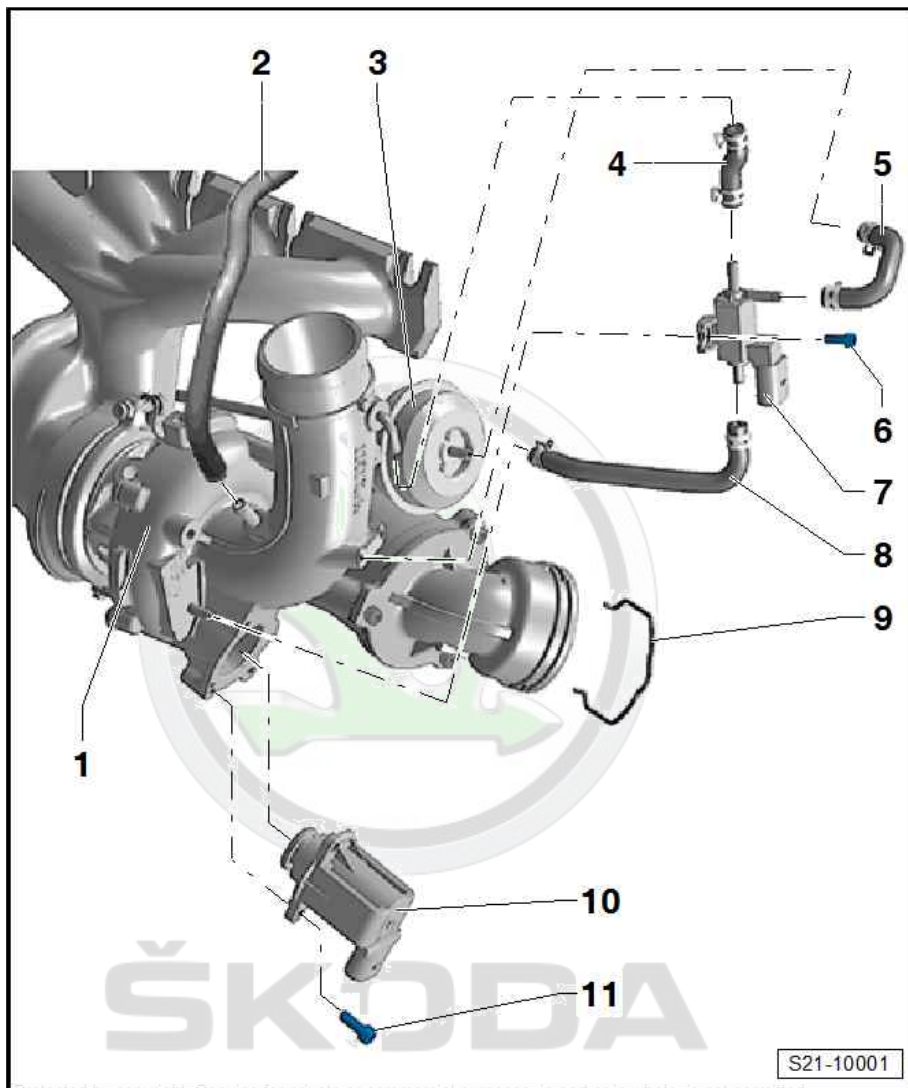
9 - Locking clip

10 - Turbocharger divert air valve - N249-

- ☐ with integrated sealing ring
- ☐ pay attention to correct installation position
⇒ [Fig. "Fitting position of the turbocharger divert air valve -N249-"](#), page 258

11 - Screw

- ☐ 7 Nm

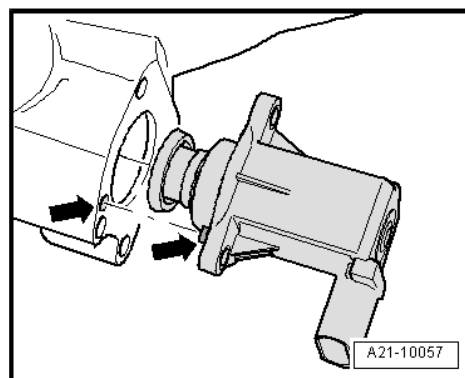


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Fitting position of the turbocharger divert air valve - N249-

- Note fitting position -arrows-.



A21-10057

Part 2

1 - Sealing ring

- ☐ replace

2 - Screw

- ☐ 33 Nm

3 - Oil feed line

4 - Exhaust gas turbocharger

- ☐ can only be replaced with exhaust manifold and pressure box
- ☐ Removing and installing
⇒ ["1.2 Removing and installing exhaust gas turbocharger", page 262](#)

5 - Screw

- ☐ 9 Nm

6 - Screw

- ☐ 9 Nm

7 - Sealing ring

- ☐ replace

8 - Screw

- ☐ tighten with Bit XZN 12 - T10099-
- ☐ 38 Nm

9 - Screw

- ☐ 9 Nm

10 - Screw

- ☐ the turbocharger must be removed for removing and installing
- ☐ 38 Nm

11 - Sealing ring

- ☐ replace

12 - Coolant feed line

- ☐ the turbocharger must be removed for removing and installing

13 - O-ring

- ☐ replace

14 - Screw

- ☐ 9 Nm

15 - Seal

- ☐ replace

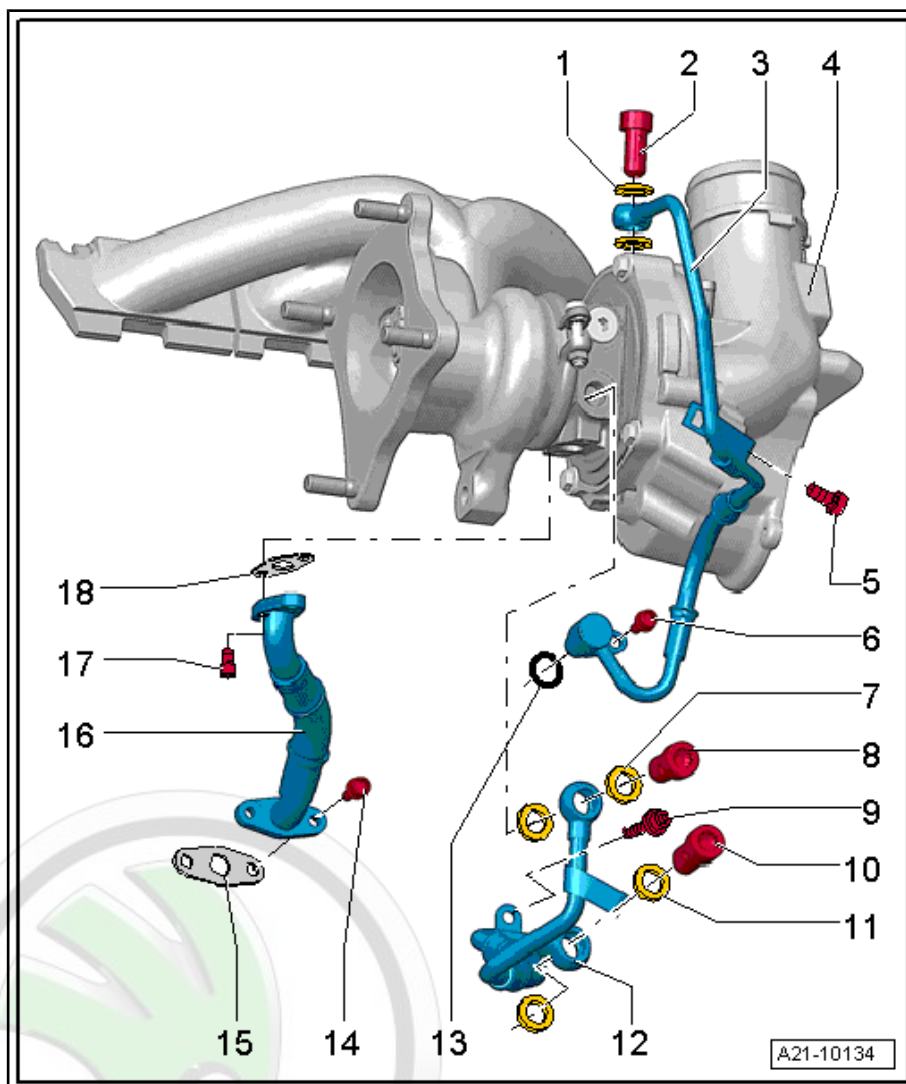
16 - Oil return-flow line

17 - Screw

- ☐ 9 Nm

18 - Seal

- ☐ replace



Part 3

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1 - Seal

- ☐ replace

2 - Nut

- ☐ Replace after disassembly
- ☐ Tightening torque and tightening order
⇒ [Fig. "Exhaust gas turbocharger - tightening sequence", page 261](#)
- ☐ Coat stud bolts of the cylinder head with hot bolt paste - G 052 112 A3-

3 - Screw

- ☐ the turbocharger must be removed for removing and installing
- ☐ 38 Nm

4 - Sealing ring

- ☐ replace

5 - Coolant return-flow line

- ☐ the turbocharger must be removed for removing and installing

6 - Screw

- ☐ 9 Nm

7 - Exhaust gas turbocharger

- ☐ can only be replaced with exhaust manifold and pressure box
- ☐ Removing and installing
⇒ ["1.2 Removing and installing exhaust gas turbocharger", page 262](#)

8 - Support

9 - Screw

- ☐ Wet screw with hot bolt paste - G 052 112 A3-
- ☐ 30 Nm

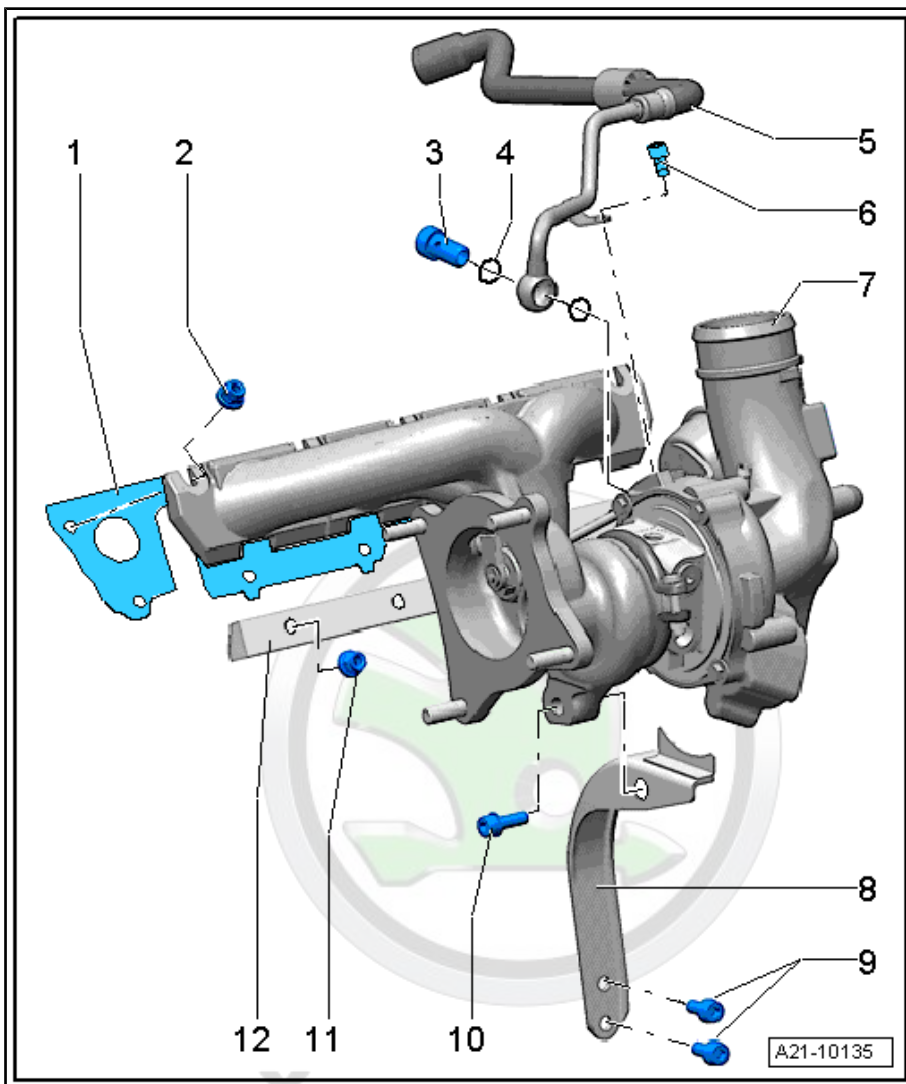
10 - Screw

- ☐ Wet screw with hot bolt paste - G 052 112 A3-
- ☐ 30 Nm

11 - Screw

- ☐ Replace after disassembly
- ☐ do not remove for removing the turbocharger
- ☐ Coat stud bolts of the cylinder head with hot bolt paste - G 052 112 A3-
- ☐ 30 Nm

12 - Terminal strip

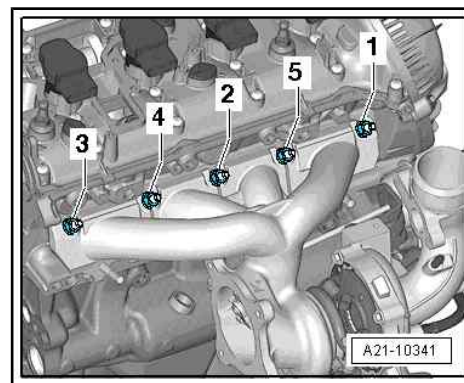


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Exhaust gas turbocharger - tightening sequence

– Tighten the turbocharger fastening nuts in the order shown:

Level	Nut	Tightening torque
1	-1- to -5-	5 Nm
2	-1- to -5-	12 Nm
3	-1- to -5-	16 Nm
4	-1- to -5-	25 Nm



Part 4



Note

Only engine identification characters BZB, CDAA and CDAB have an adjustable pressure box built in.

1 - Exhaust gas turbocharger

- ☐ can only be replaced with exhaust manifold and pressure box
- ☐ Removing and installing
⇒ [“1.2 Removing and installing exhaust gas turbocharger”, page 262](#)

2 - Turbocharger pressure box

- ☐ Inspect proper operation
⇒ [“1.3 Check proper operation of pressure box for turbocharger”, page 267](#)
- ☐ Removing and installing
⇒ [“1.4 Removing and installing the exhaust gas turbocharger vacuum unit”, page 268](#)
- ☐ adjust, only on engines with identification characters BZB, CDAA, CDAB ⇒ [page 269](#)

3 - Screw

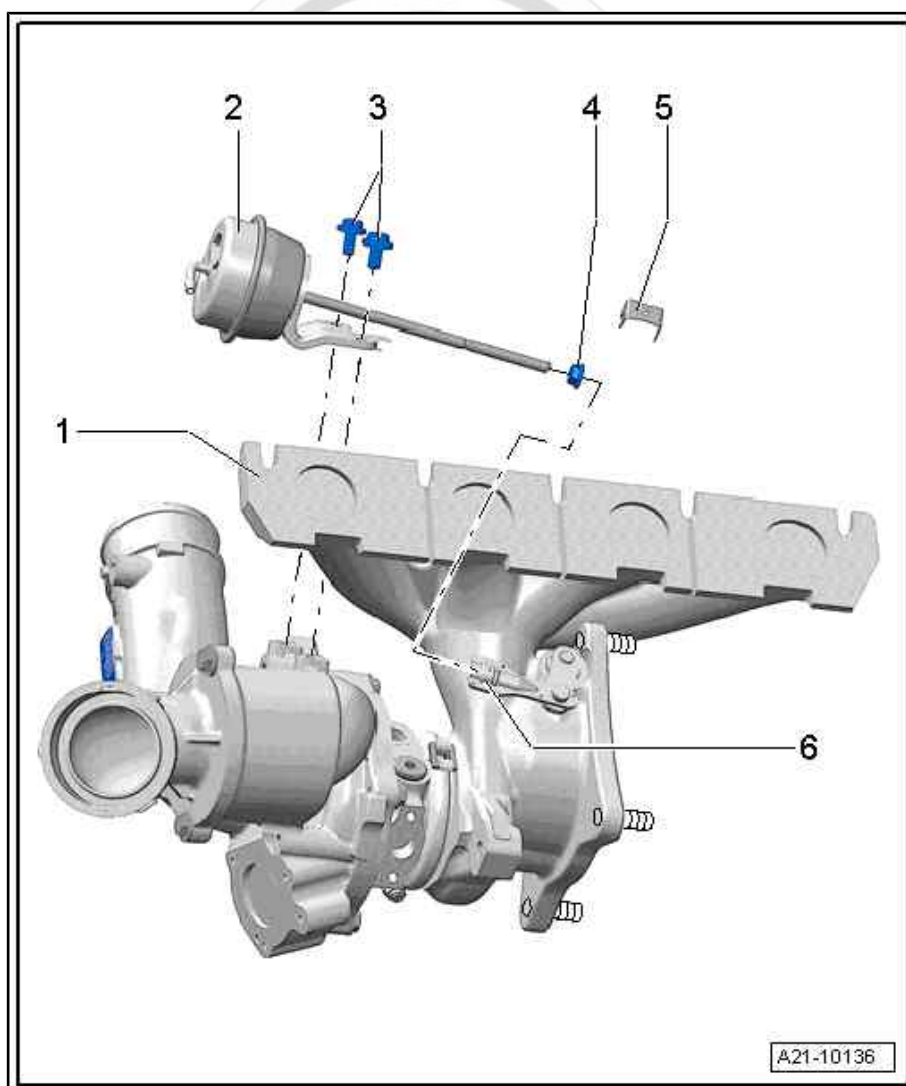
- ☐ 10 Nm

4 - Nut

- ☐ only for engine identification characters BZB, CDAA, CDAB
- ☐ secure with silicone sealant ⇒ ETKA - Electronic catalogue of original parts
- ☐ 9 Nm

5 - Lock washer

- ☐ only for engine identification characters BZB, CDAA, CDAB





6 - Knurled screws

- only for engine identification characters BZB, CDAA, CDAB

1.2 Removing and installing exhaust gas turbocharger

Special tools and workshop equipment required

- ◆ Pliers for spring-type clips
- ◆ Bits XZN 12 - T10099-
- ◆ Bits XZN 10 - T10154-
- ◆ Screw plug set e. g. -VAS 6122-

Observe rules for cleanliness

⇒ [“3.1 Rules of cleanliness”, page 6](#) .



NOTICE

In case a mechanical damage to the exhaust gas turbocharger is found, for example, damage to the compressor wheel, it is not sufficient to only replace the turbocharger. In order to avoid consequential damage, perform the following tasks:

- ◆ Clean all oil lines.
- ◆ Change engine oil and oil filter.
- ◆ Inspect the air filter housing, the air filter element and the intake hoses for contaminations.
- ◆ Inspect the whole charge-air routing and the charge air cooler for foreign bodies.

If foreign bodies are detected in the charge air system, the complete charge-air routing must be cleaned and if necessary the charge air cooler must also be replaced.

Removing

- Drain coolant ⇒ [“1.3 Draining and filling coolant”, page 179](#) .
- Remove the front right wheelhouse liner ⇒ Body Work; Rep. gr. 66 .

Vehicles with front-wheel drive

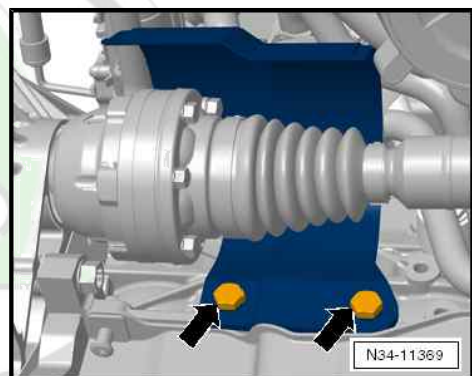
- Unbolt heat shield for right drive shaft -arrows-.

Vehicles with four-wheel drive

- Remove right flange shaft from gearbox ⇒ Chassis, axles, steering; Rep. gr. 40 ; Drive shaft; removing and installing drive shaft .

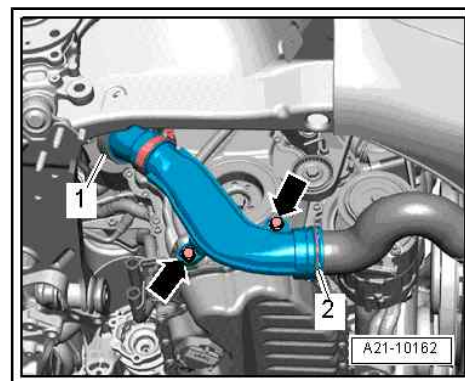
Continued for all vehicles

- Remove pre-exhaust pipe
⇒ [“1.5 Removing and installing pre-exhaust pipe”, page 335](#) .

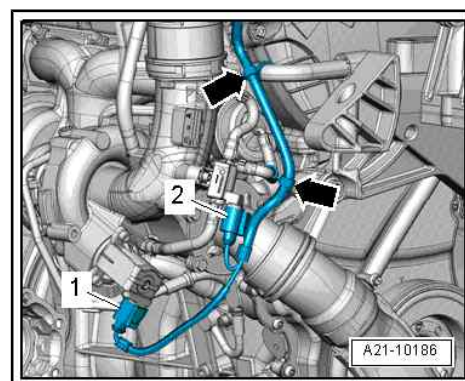


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- Remove screws -arrows-.
- Remove charge-air pipe, raise the terminals -1- and -2-.

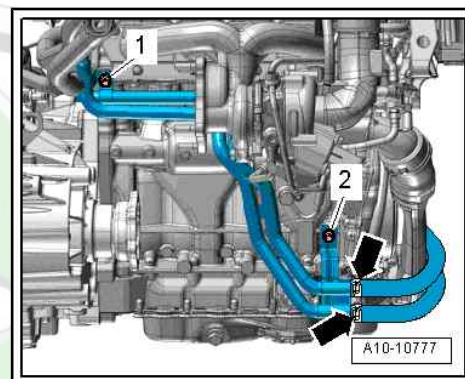


- Disconnect the connectors -1- and -2- and expose the electrical cable -arrows-.



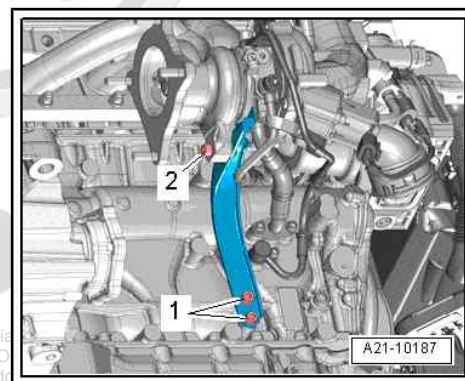
Vehicles with auxiliary heating

- Unscrew screws -1- and -2- and swivel coolant pipes to the left.



Continued for all vehicles

- With Bits XZN 10 - T10154- unscrew screws -1-.
- Release screw -2- and remove the support for turbocharger.



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- Remove the hollow screw -2- and place the coolant line to one side.

Vehicles with front-wheel drive

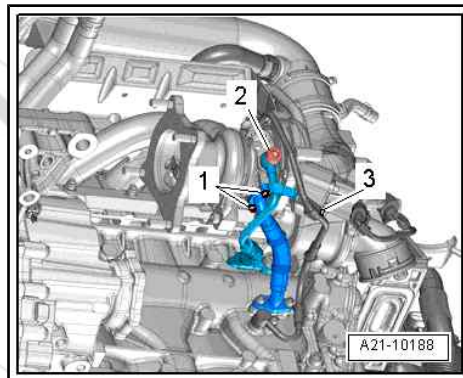
- Unscrew screws -1- at the oil return line.

Vehicles with four-wheel drive

- Unscrew the screws on the oil return line at the cylinder block.

Continued for all vehicles

- Unscrew screw -3- at the oil feed line.



Note

For a clearer illustration, the installation position is shown with the engine removed.

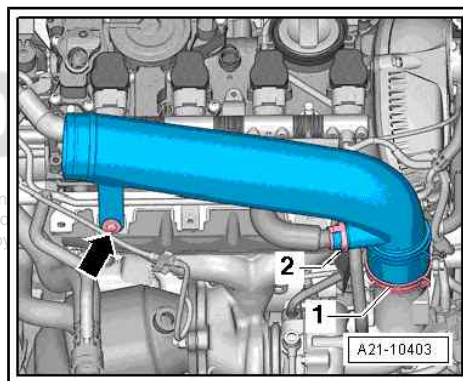
- Press the release buttons and remove pipe -2- for crankcase ventilation.
- Unscrew screw -arrow-.
- Loosen hose clamp -1- and remove the intake manifold.



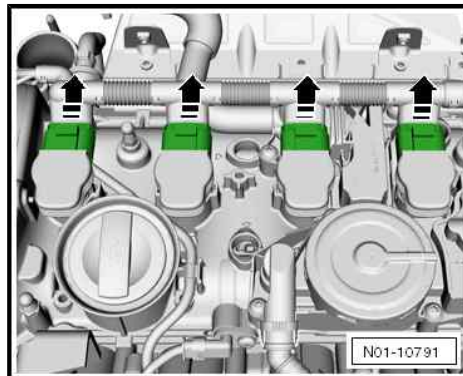
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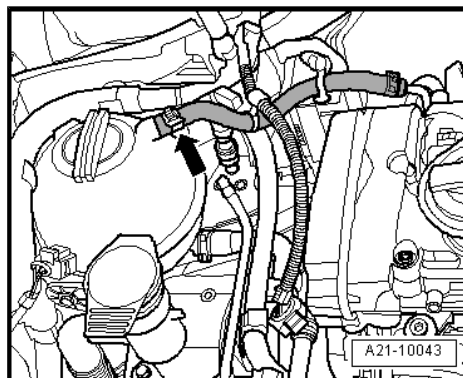
Seal intake manifold on turbocharger with screw plug set for example, -VAS 6122-.



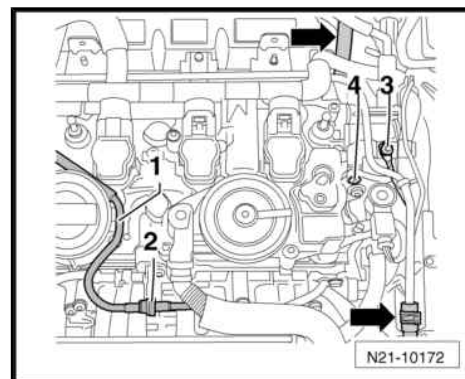
- Remove the connector from the ignition coils and place the wiring harness to one side.



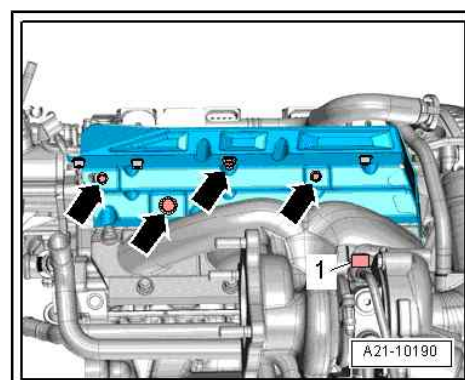
- Disconnect the coolant line for the coolant expansion tank -arrow-.



- Disconnect the vacuum line -1- at the separation point -2- and expose the cable.
- Remove coolant hoses -arrows- from the coolant pipe.
- Unscrew the earth cable -3- and remove the screw -4-.



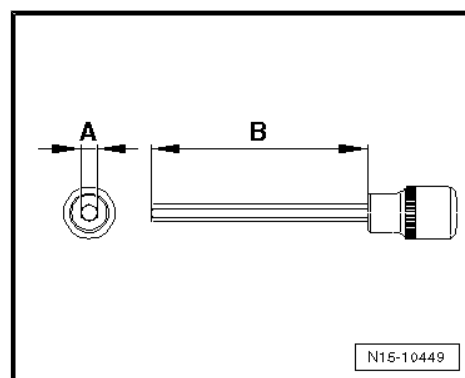
- Unscrew screws -arrows- (20 Nm) and remove the heat shield together with the coolant pipe.
- Release screw -1- and remove oil feed line.



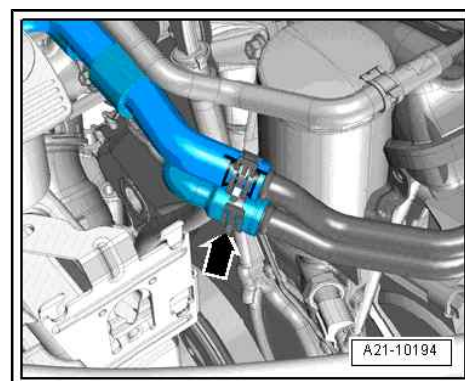
Note

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Remove screw -2- from the heat shield using an adapter with 6 mm hex -A-. The minimum shape of the hexagon must be 5 cm -B-. The adapter which narrows to 6 mm at the tip, is too thick.

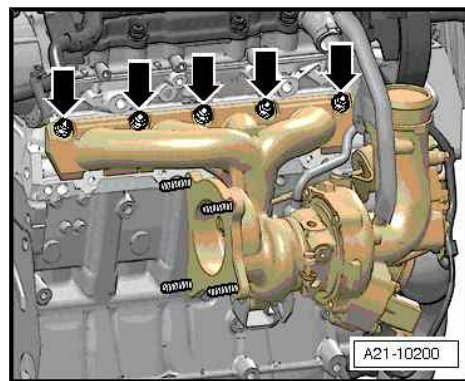


- Disconnect the coolant hose -arrow- and expose.





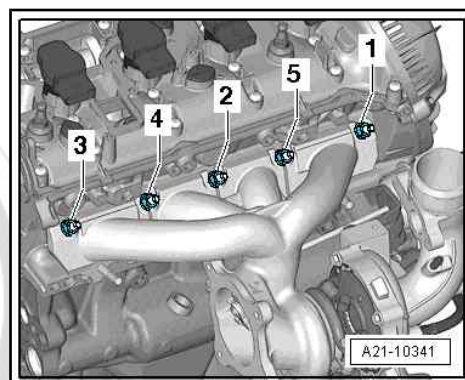
- Unscrew the nuts -arrows-.
- Lift turbocharger up and out.



Installing

The installation occurs in reverse order. However, pay attention to the following:

- Tighten nuts for turbocharger in order -1- to -5-
⇒ [Fig. "Exhaust gas turbocharger - tightening sequence"](#), [page 261](#) .
- ♦ Gaskets, sealing rings and self-locking nuts must be replaced.
- ♦ Fill the exhaust turbocharger with engine oil at the connection fitting for the oil feed line.
- ♦ To ensure the oil supply to the exhaust gas turbocharger, leave the engine running for about 1 minute after installing the exhaust gas turbocharger.
- ♦ The radiator return-flow line must be installed together with the turbocharger.
- ♦ Hose connections and hoses for charge air system must be free of oil and grease before assembly. Only seals and sealing surfaces of the quick couplings are coated with oil
⇒ ["2.2 Hose connections of the charge air system"](#), [page 277](#) .
- ♦ Secure all hose connections with hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .
- Install pre-exhaust pipe
⇒ ["1.5 Removing and installing pre-exhaust pipe"](#), [page 335](#) .
- Top up coolant
⇒ ["1.3 Draining and filling coolant"](#), [page 179](#) .



Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ♦ Summary of components - exhaust gas turbocharger
⇒ ["1.1 Summary of components - exhaust gas turbocharger"](#), [page 256](#) .
- ♦ Charge air pipe
⇒ ["2.1 Summary of components - charge air cooler"](#), [page 274](#) .

1.3 Check proper operation of pressure box for turbocharger

Special tools and workshop equipment required

- ◆ Hand vacuum pump , e.g. -VAS 6213-

Test conditions

- Engine oil temperature at least 60 °C.
- The hoses from the turbocharger to the charge pressure control solenoid valve - N75- and from the charge pressure control solenoid valve - N75- to the pressure box must be tight.
- The solenoid valve for charge pressure control - N75- is OK
- The exhaust system must be leak-tight.

Work procedure

- Remove engine cover
⇒ [“1.5 Removing and installing engine trim panel”, page 21](#) .
- Switch the engine on. With a mirror, observe the operating rod -A- of the pressure box on the turbocharger.

Now bring the engine with a second mechanic up to high revolutions by spontaneously pressing on the accelerator pedal.

- The linkage -A- should now move.

If the linkage does not move,

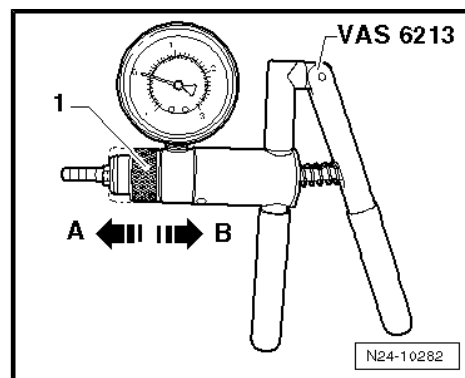
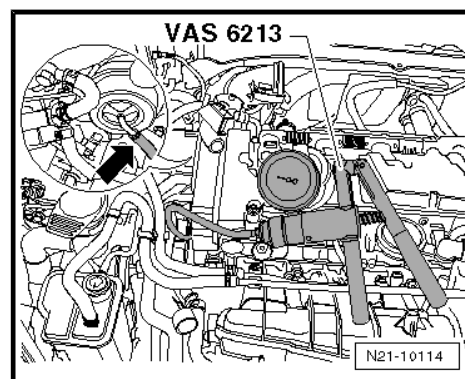
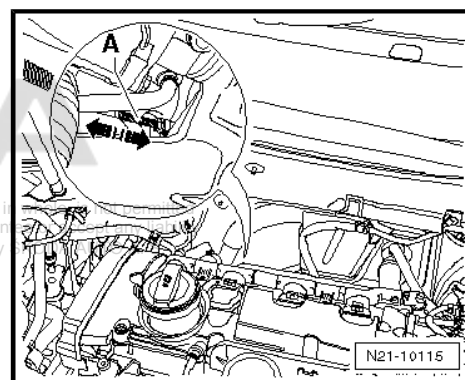
- Connect the hand vacuum pump - VAS 6213- to the pressure box -arrow-.

- Put the sliding ring -1- of the hand vacuum pump - VAS 6213- in position -B- for “pressure”.

NOTICE

**The pressure must not be greater than 0.075 MPa (750 mbar).
The pressure box can be damaged if the pressure is exceeded.**

- Press the hand vacuum pump - VAS 6213- several times and observe the linkage using the mirror.





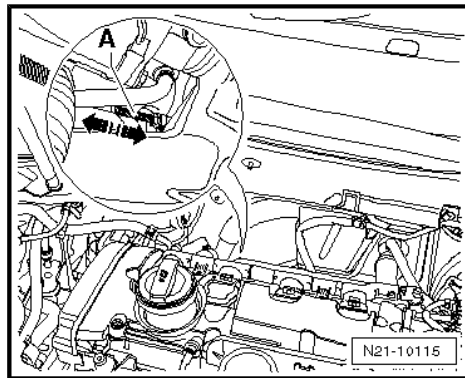
- The linkage -A- should now move slowly from approx. 0.030 MPa (300 mbar). At approx. 0.070 MPa (700 mbar), it should remain stationary at the end stop.

The stroke of the linkage is approx. 10 mm.



Note

- ◆ If it is not possible to build up pressure using the hand vacuum pump - VAS 6213- , or if the pressure drops off right away, inspect the hand vacuum pump - VAS 6213- and connecting hoses for leaks.
- ◆ If no fault is detected: Replace with 1.8 l motor pressure box
⇒ ["1.4 Removing and installing the exhaust gas turbocharger vacuum unit", page 268](#) , replace exhaust gas turbocharger with 2.0 l engine
⇒ ["1.2 Removing and installing exhaust gas turbocharger", page 262](#) .
- ◆ If the pressure box is o.k. and the linkage -A- does not move: Check the bypass flap lever for smooth operation. If the lever is sluggish or blocked: Replace turbocharger
⇒ ["1.2 Removing and installing exhaust gas turbocharger", page 262](#) .

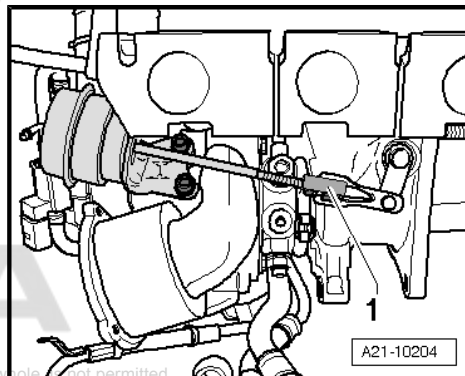


1.4 Removing and installing the exhaust gas turbocharger vacuum unit

For engines with identification characters BZB, CDAA, CDAB

Removing

- Remove exhaust turbocharger
⇒ ["1.2 Removing and installing exhaust gas turbocharger", page 262](#) .
- Remove the lock washer -1- from the turbocharger via the linkage of the pressure box.



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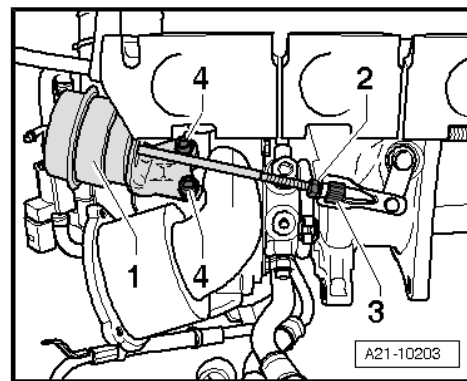
- Release the nut -2-.
- Disconnect the linkage from the turbocharger -3-.
- Remove screws -4- and remove the pressure box -1-.

Installing

The installation occurs in reverse order. However, pay attention to the following:

- Inserting exhaust gas turbocharger pressure box
⇒ [“1.5 Adjusting exhaust turbocharger pressure box”](#),
[page 269](#) .

Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Turbocharger pressure box
⇒ [“1.1 Summary of components - exhaust gas turbocharger”](#),
[page 256](#) .

1.5 Adjusting exhaust turbocharger pressure box

For engines with identification characters BZB, CDAA, CDAB

Special tools and workshop equipment required

- ◆ Universal dial gauge bracket - MP 3-447 (VW 387)-
- ◆ Hand vacuum pump , e.g. -VAS 6213-
- ◆ Pressure control valve , e.g. -VAS 6342-
- ◆ Turbocharger tester , e.g. -V.A.G 1397 A-
- ◆ Dial gauge , e.g. -VAS 6341/1-
- ◆ Extension, 30 mm , e.g. -VAS 6341/3-
- ◆ Flat button , e.g. -VAS 6341/4-



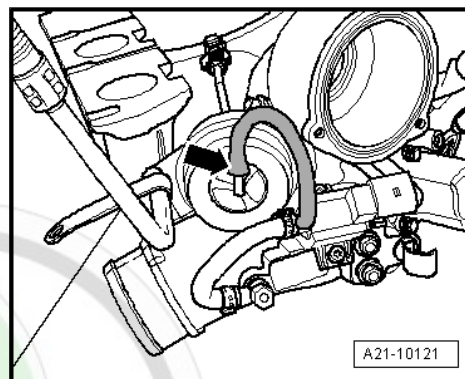
Note

- ◆ *This workflow is only used to set the pressure box. The values may vary when inspecting pressure boxes which have already been set.*
- ◆ *The pressure box must only be set when the linkage was undone.*
- ◆ *This setting is made when the turbocharger is removed.*
- Remove exhaust turbocharger
⇒ [“1.2 Removing and installing exhaust gas turbocharger”](#),
[page 262](#) .

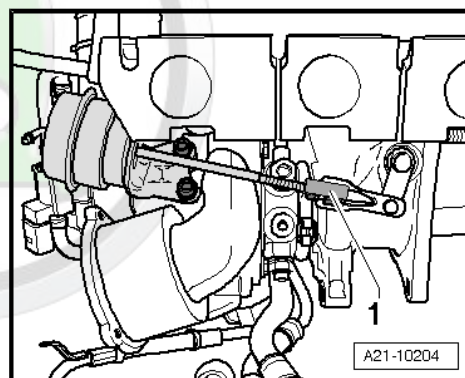
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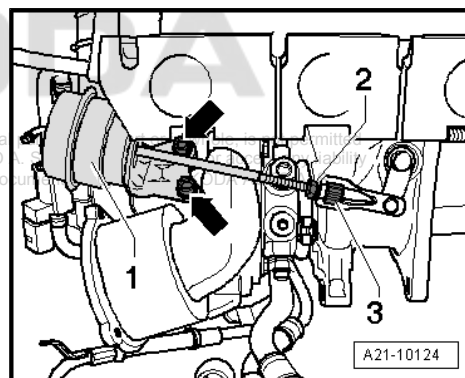
- Remove the hose -arrow- from the pressure box on the turbocharger.



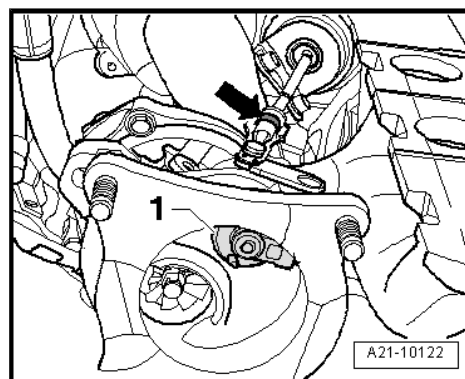
- Remove the lock washer -1- from the turbocharger via the linkage of the pressure box.



- Loosen the pressure box nut for turbocharger -2-.

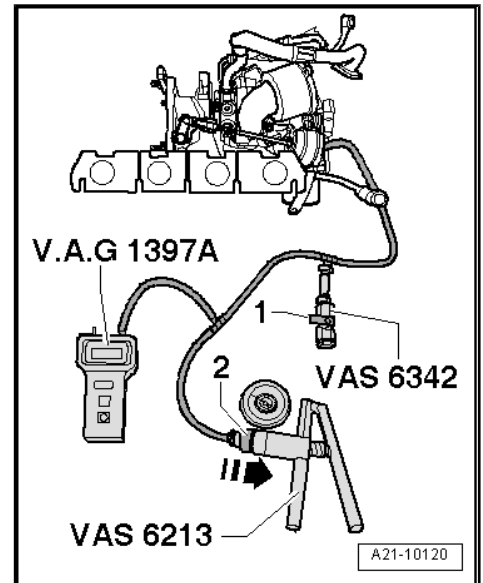


- Pre-set the bypass valve -1- via the linkage of the pressure box -arrow- so that the bypass valve can still just about be rotated from its position with the hand.
- Tighten the nut for the exhaust gas turbocharger by hand.

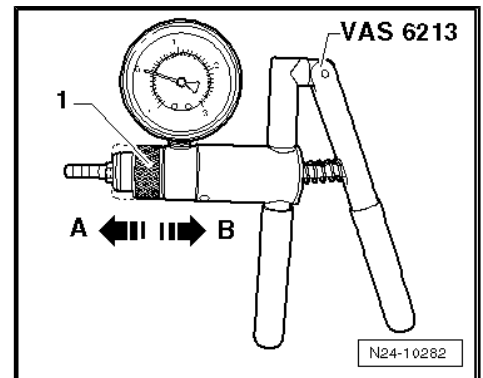


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- Fit the hand vacuum pump - VAS 6213- , the turbocharger tester - V.A.G 1397 A- with connection II and the pressure relief valve - VAS 6342- together as shown in the figure.
- Connect the pressure relief valve - VAS 6342- to the lever -1-.



- Put the switch ring -1- of the hand vacuum pump - VAS 6213- to position -B- for “pressure”.
- Switch on the turbocharger tester - V.A.G 1397A- and put the sliding switch into position II.

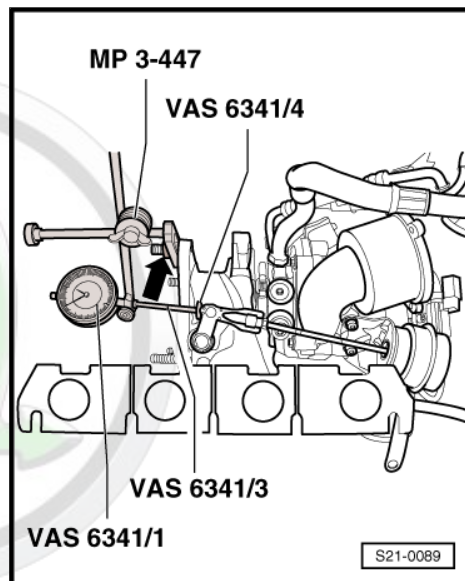


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- Secure universal dial gauge bracket - MP3-447 (VW 387)- to the exhaust gas turbocharger-arrow-.
- Secure the dial gauge - VAS 6341/1- with 30 mm extension piece - VAS 6341/3- and flat button - VAS 6341/4- to the universal dial gauge bracket - MP3-447 (VW 387)- .
- At 0 MPa (0 bar), set the pretension on the dial gauge - VAS 6341/1- to 1 mm.
- Turn the scale of the dial gauge - VAS 6341/1- to 0 (zero).
- Check the dial gauge for ease of movement.
- Press the hand vacuum pump - VAS 6213- until the turbo-charger tester - V.A.G 1397 A- indicates 0.046 MPa $\pm$ 0.0005 MPa (460 mbar $\pm$ 5 mbar).
- The dial gauge should indicate 4.1...4.3 mm. If not, continue to turn the linkage of the pressure box until this value is indicated.



Note

The mm indications relate to the value that is read (contains a 1 mm pre-tension).

- Tighten the nut for the exhaust gas turbocharger by hand.
- Repeat measurement.
- Reduce pressure via pressure control valve - VAS 6342- to 0 MPa (0 bar).
- Set the dial gauge - VAS 6341/1- to 0 (null).



Note

- ♦ *Observe the sequence of the following measurements.*
- ♦ *In between times, the pressure should not be relieved to 0 MPa (0 bar).*
- Press the hand vacuum pump - VAS 6213- until the turbo-charger tester - V.A.G 1397 A- indicates 0.046 MPa $\pm$ 0.0005 MPa (460 mbar $\pm$ 5 mbar).
- Read the value on the dial gauge - VAS 6341/1- (value 1) and note it down.
- Press the hand vacuum pump - VAS 6213- until the turbo-charger tester - V.A.G 1397 A- indicates 0.065 MPa 0.070 MPa (650 mbar to 700 mbar).
- Release the pressure via the pressure control valve - VAS 6342- to 0.046 MPa $\pm$ 0.0005 MPa (460 mbar $\pm$ 5 mbar).
- Read the value on the dial gauge - VAS 6341/1- (value 2) and note it down.
- Add values 1 and 2 together and divide by 2.
- The result (mean) must be 5 $\pm$ 0.25 mm.

If the result (mean) is not 5 $\pm$ 0.25 mm.

- Correct setting, tighten pressure box nuts for exhaust gas turbocharger and repeat the measurement.

If the result (mean) is 5 $\pm$ 0.25 mm.

- Tighten the nut for the exhaust gas turbocharger to the specified torque and secure with sealing wax ⇒ ETKA - Electronic Catalog of Original Parts .
- Secure the lock washer -1- to the turbocharger via the linkage of the pressure box.

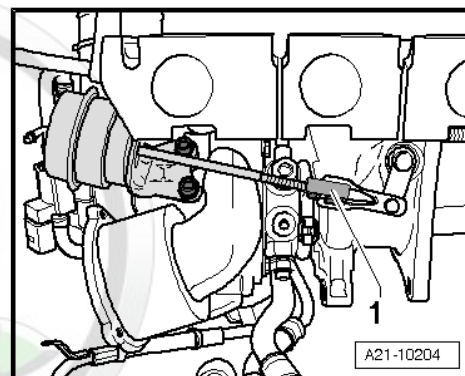
Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Pressure box nut for turbocharger
⇒ ["1.1 Summary of components - exhaust gas turbocharger", page 256](#) .



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2 Charge air system with exhaust gas turbocharger

⇒ [“2.1 Summary of components - charge air cooler”, page 274](#)

⇒ [“2.2 Hose connections of the charge air system”, page 277](#)

⇒ [“2.3 Removing and installing charge air cooler”, page 278](#)

⇒ [“2.4 Connection diagram for turbocharger charging”, page 279](#)

⇒ [“2.5 Checking the charge-air system with turbocharger for leak tightness”, page 280](#)

2.1 Summary of components - charge air cooler

⇒ [“2.1.1 Summary of components - charge air cooler Octavia II, Yeti”, page 274](#)

⇒ [“2.1.2 Summary of components - Charge air cooler Superb II”, page 275](#)

2.1.1 Summary of components - charge air cooler Octavia II, Yeti

Before a test or repair, check all charge air pipes, charge air hoses and vacuum lines for tight connection and leak tightness.

Observe rules for cleanliness

⇒ [“3.1 Rules of cleanliness”, page 6](#) .

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Observe rules for cleanliness
⇒ “3.1 Rules of cleanliness”, page 6 .



1 - Screw

- 5 Nm

2 - Storage

- for charge air cooler

3 - Charge air cooler

- with top and bottom seal inserted
- Removing and installing
⇒ ["2.3 Removing and installing charge air cooler"](#), page 278

4 - Charge air pipe

5 - Screw

- 10 Nm

6 - from exhaust turbocharger

7 - Charge air hose

8 - Right charge air pipe

9 - Bottom charge air pipe

10 - Charge air hose

11 - Screw

- 5 Nm

12 - Charge pressure transmitter - G31-

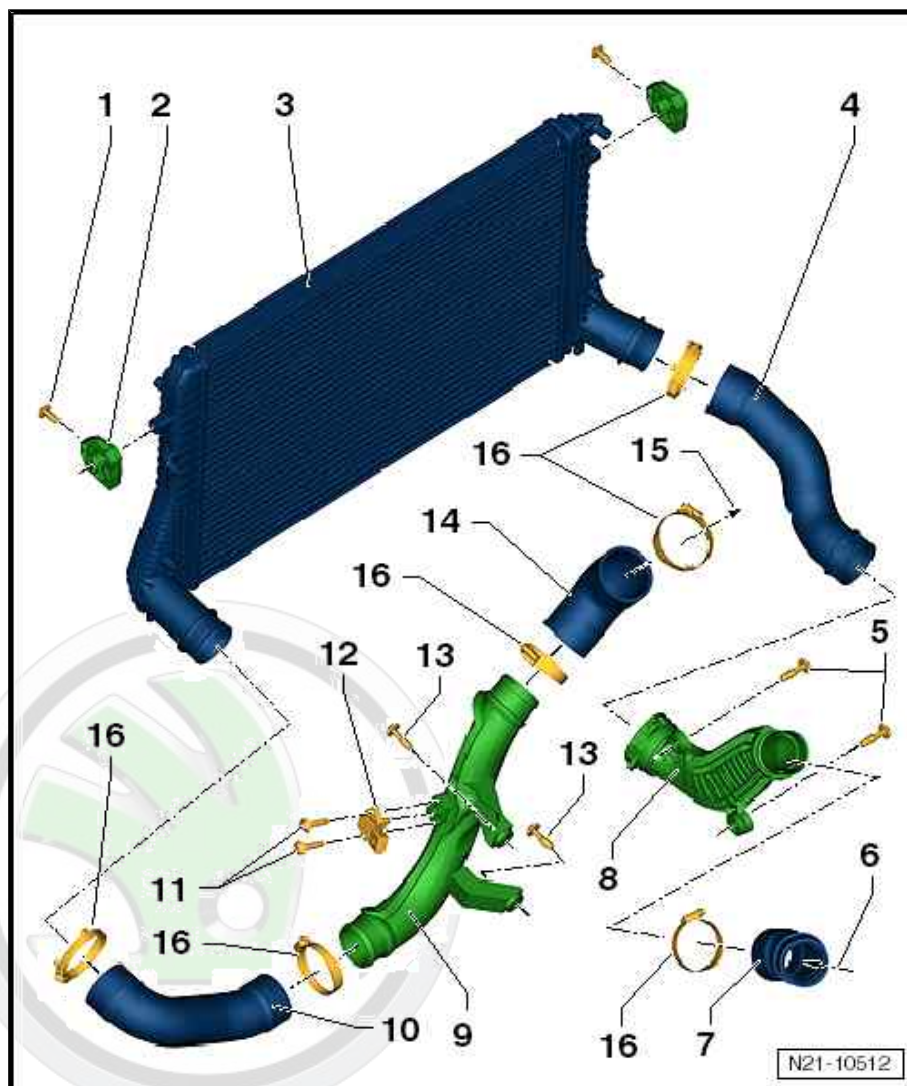
13 - Screw

- 10 Nm

14 - Charge air hose

15 - to throttle valve control unit - J338-

16 - Screw clamps



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2.2 Hose connections of the charge air system

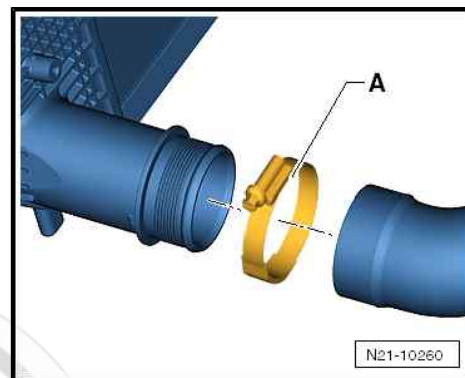
Hose connections with fluted pipes

NOTICE

The screw clamps -A- on the charge air hoses must be tightened to 6 Nm. A too low, but also a too high tightening torque, may result in the hose slipping off the charge air pipe during driving.

Note

- ◆ Before an inspection or a repair, check all the air guide pipes and air guide hoses as well as vacuum lines for tight connection and leaktightness.
- ◆ The pipe support and the air guide hoses must be de-oiled and degreased before installing.
- ◆ Secure all hose connections with hose clamps which comply with the series design ➔ ETKA - Electronic Catalogue of Original Parts .
- ◆ In order to secure the air guide hoses on their connection fittings, the screw threads must be sprayed with rust solvent before installing if the screw clamps have been used beforehand.



Hose connections with quick couplings

NOTICE

The gasket ring for the push-fit coupling can be damaged, if the locking clip is in the -lock position- during the assembly. The connection would leak. Observe the assembly instruction.

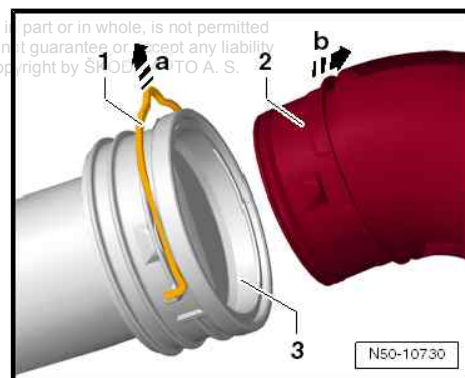
Removing

- Release the securing clamp -1- in the direction of arrow -a- by pulling on it.
- Pull hose -2- in direction of arrow -b- out of the push-on coupling -3- without using a tool.

Installing

When replacing the sealing ring, place the sealing ring in the groove of the charge air hose. Make sure that the gasket ring is fully seated all around in the groove and not twisted.

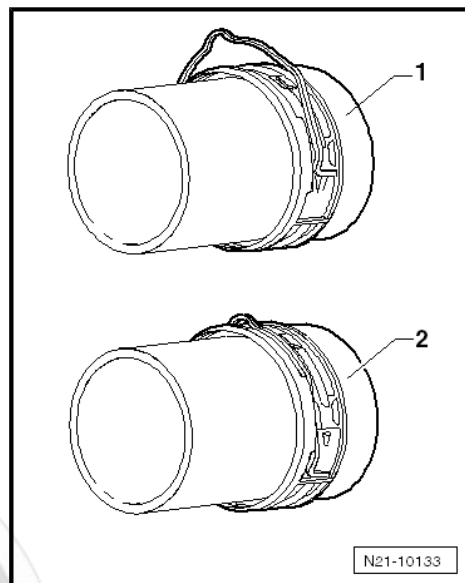
- Oil sealing surface and gasket ring.



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Octavia II 2004 ➤ , Octavia II 2010 ➤ , Superb II 2008 ➤ , Superb II 20 ...
1.8/112; 118 kW; 2.0/147 kW TSI engine - Edition 06.2019

- Move the securing clamp in the position -unlocked- -1-.
- Insert the charge air hose up to the stop into the coupling.
- Move the locking clip to the -locked- position -2- and then push the charge air hose again.
- Check hose for tight connection by pulling on it and check the quick coupling is locked correctly.



2.3 Removing and installing charge air cooler

Removing

- Remove radiator
⇒ [“4.2 Removing and installing radiator”, page 208](#) .
- Remove front bumper ⇒ Body Work; Rep. gr. 63 .
- Remove the charge air hoses on the left and right from the charge air cooler.

⚠ CAUTION

Do not open the refrigerant circuit of the air conditioning system.

ⓘ NOTICE

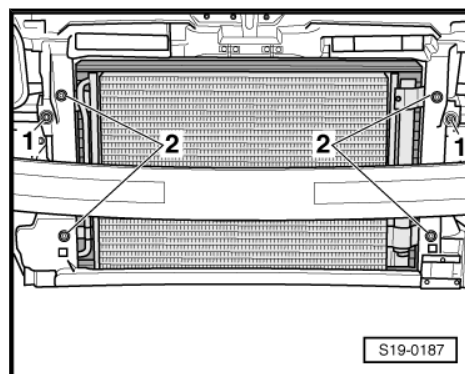
To prevent damage to condenser or to refrigerant lines/hoses, ensure that the lines and hoses are not stretched, kinked or bent.

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- Screw out the fixing screws -2- of the condenser.

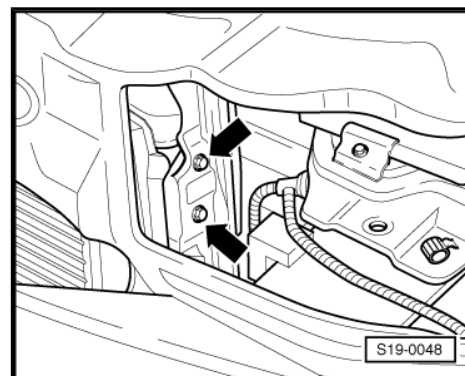
For the vehicles Superb II

- Unscrew fixing screws -1- for charge air cooler on right and left.



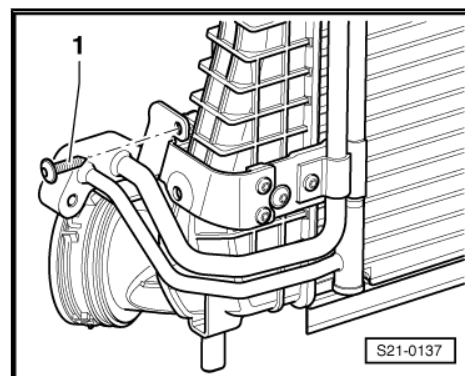
For the vehicles Octavia II, Yeti

- Unscrew fixing screws -arrows- for charge air cooler on right and left.



Continued for all vehicles

- Press off the charge air cooler from the lock carrier with the assistance of a 2nd mechanic so that the screw -1- for attaching the pipes of the air conditioning system to the radiator is accessible.
- Remove screw -1-.
- Attach condensor to lock carrier.
- Carefully remove charge air cooler downwards.



Installing

Assembly is carried out in the reverse order. When installing, observe the following:



Note

Replace O-rings.

Observe the assembly instruction for hose connections with push-fit couplings

⇒ ["2.2 Hose connections of the charge air system", page 277](#) .

Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Screws for charge air cooler ⇒ ["2.1 Summary of components - charge air cooler", page 274](#) .

- ◆ Screws for capacitor ⇒ Heating, air conditioning; Rep. gr. 87 .

2.4 Connection diagram for turbocharger charging



1 - Brake booster

2 - Check valve with connection fitting

3 - Vacuum pump

4 - Air mass meter - G70-

5 - Air filter

6 - Crankcase ventilation

- ☐ with pressure relief valve

7 - Valve for variable intake manifold changeover - N156-

8 - Positioning element for valve for intake manifold flap

9 - Double non-return valve

- ☐ Check
⇒ ["6.2 Check the double non-return valve", page 320](#)
- ☐ with electrical solenoid valve 1 for activated charcoal filter - N80- one building unit

10 - Charge air cooler

11 - Throttle valve control unit - J338-

12 - activated charcoal filter solenoid valve 1 - N80-

- ☐ with double non-return valve, one building unit

13 - to the activated charcoal filter system

14 - Intake manifold

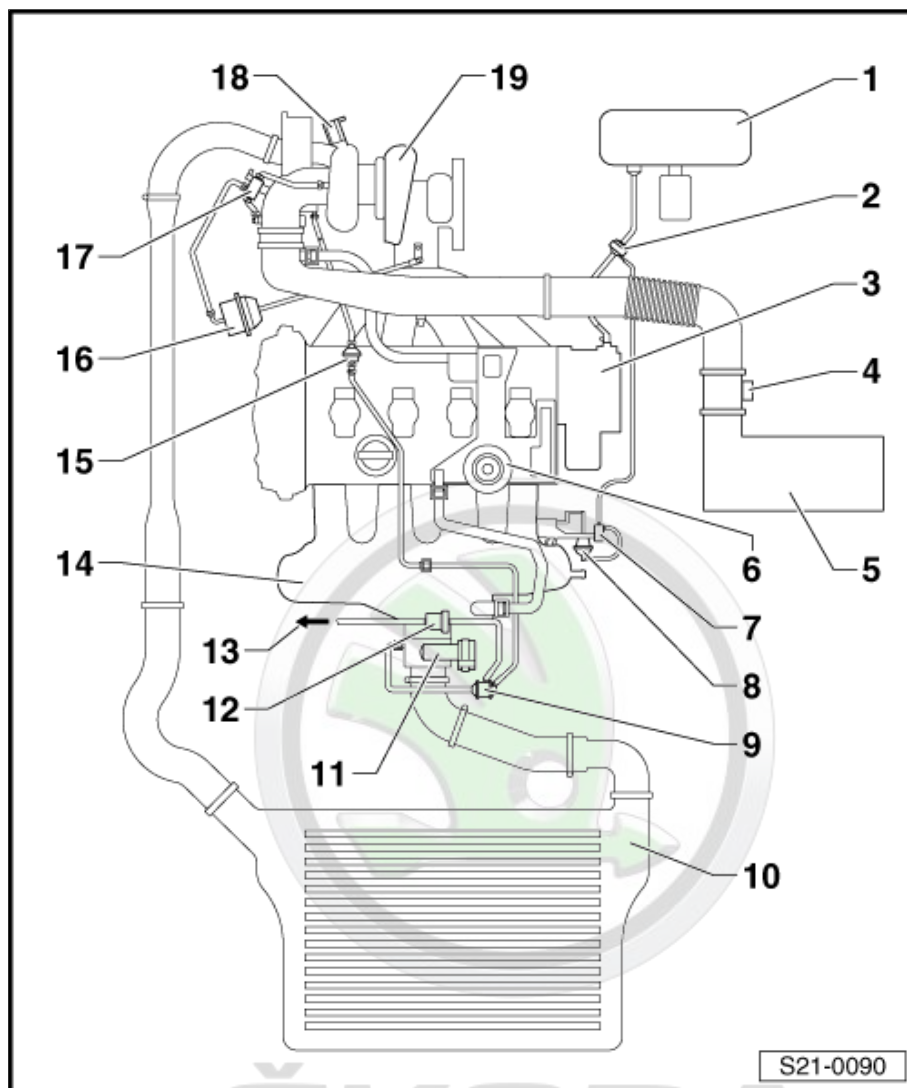
15 - Non-return valve

16 - Pressure box for charge pressure control

17 - Solenoid valve for charge pressure control - N75-

18 - Turbocharger divert air valve - N249-

19 - Exhaust gas turbocharger

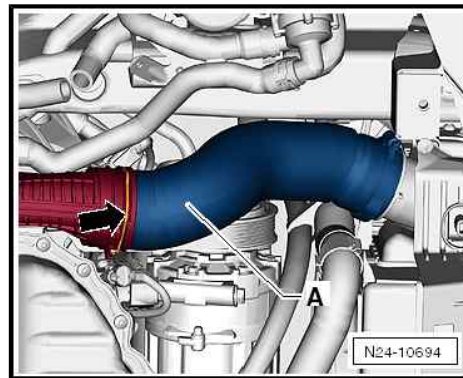


2.5 Checking the charge-air system with turbocharger for leak tightness

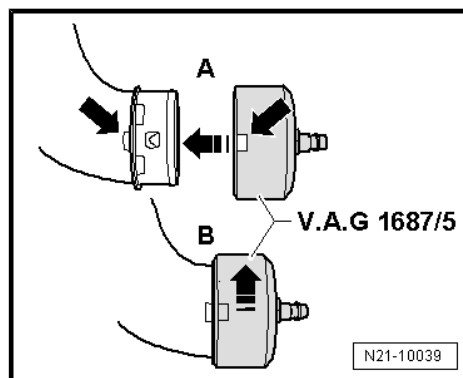
Special tools and workshop equipment required

- ◆ Charge-air system testing device , e. g. -V.A.G 1687-
- ◆ Adapter e.g. -V.A.G 1687/5-
- ◆ Ultrasonic tester , e.g. -V.A.G 1842-
- Remove noise insulation ⇒ Body Work ⇒ Rep. gr. 50 .

- Unlock clamp -arrow- and pull off hose -A- from the charge air hose.

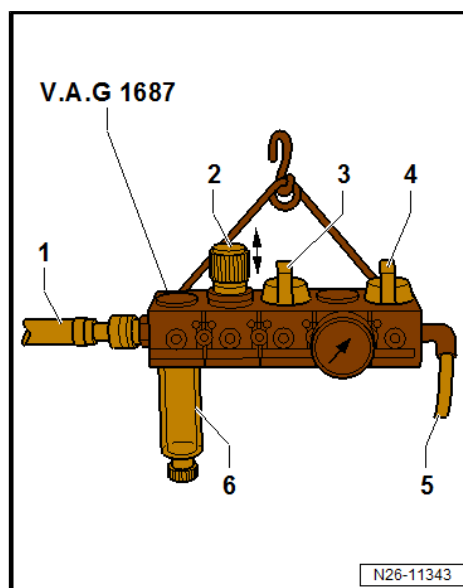
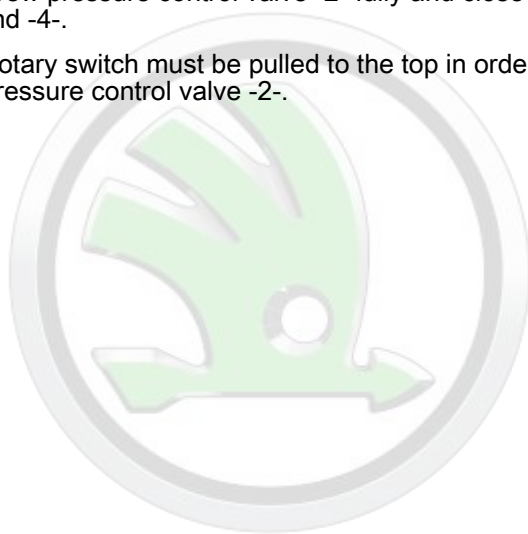


- Plug the adapter - V.A.G 1687/5- onto the charge air hose -A- and turn by approx. 90° -B-.

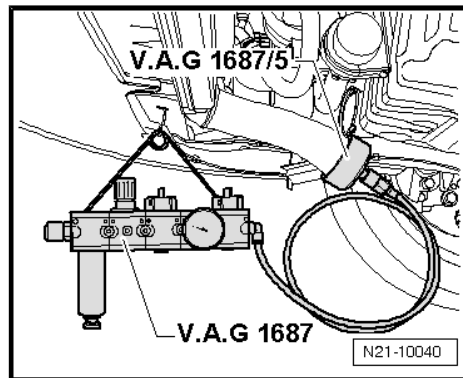


Prepare tester for charge air system - V.A.G 1687- as follows:

- Unscrew pressure control valve -2- fully and close the valves -3- and -4-.
- The rotary switch must be pulled to the top in order to rotate the pressure switch valve -2-.



- Connect the tester for charge air systems - V.A.G 1687- as shown:



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- Connect the pneumatic hose -1- (pneumatic support) to tester for charge air systems - V.A.G 1687- .



Note

If there is water in the inspection glass, drain water via the drain plug -6-.

- Open valve -3-.
- Set the pressure to 0,05 MPa (0,5 bar) with the pressure control valve -2-.



NOTICE

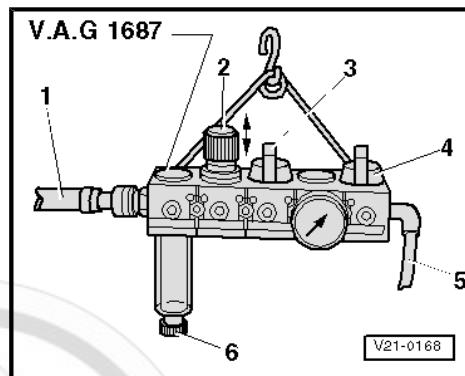
The pressure must not be greater than 0.05 MPa (0.5 bar)! A too high pressure can damage the engine.

- Open valve -4- and wait until the test circuit is filled. If necessary, re-adjust the pressure to 0.05 MPa (0.5 bar).
- Checking the charge-air system for leaktightness:
 - ◆ by listening,
 - ◆ by hand
 - ◆ with commercially available leak search spray
 - ◆ with the ultrasonic tester - V.A.G 1842-



Note

- ◆ *A small amount of air escapes via the valves into the engine. For this reason no pressure test is possible.*
- ◆ *Using the ultrasonic tester - V.A.G 1842- ⇒ Owner's Manual.*
- ◆ *Before removing the adapter, depressurize the test circuit by detaching the coupling from the adapter - V.A.G 1687/5- .*
- ◆ *Hose connections and hoses for the charge air system must be free of oil and grease before being installed.*



24 – Mixture preparation - injection

1 Injection system

⇒ [“1.1 Installation location overview - fuel injection system”, page 283](#)

1.1 Installation location overview - fuel injection system

The components A through G are not represented in the exploded view drawing.

1 - Camshaft control valve 1 - N205-

- ❑ Removing and installing
⇒ [“4.3 Removing and installing camshaft control valve 1 N205”, page 147](#)

2 - Solenoid valve for charge pressure control - N75-

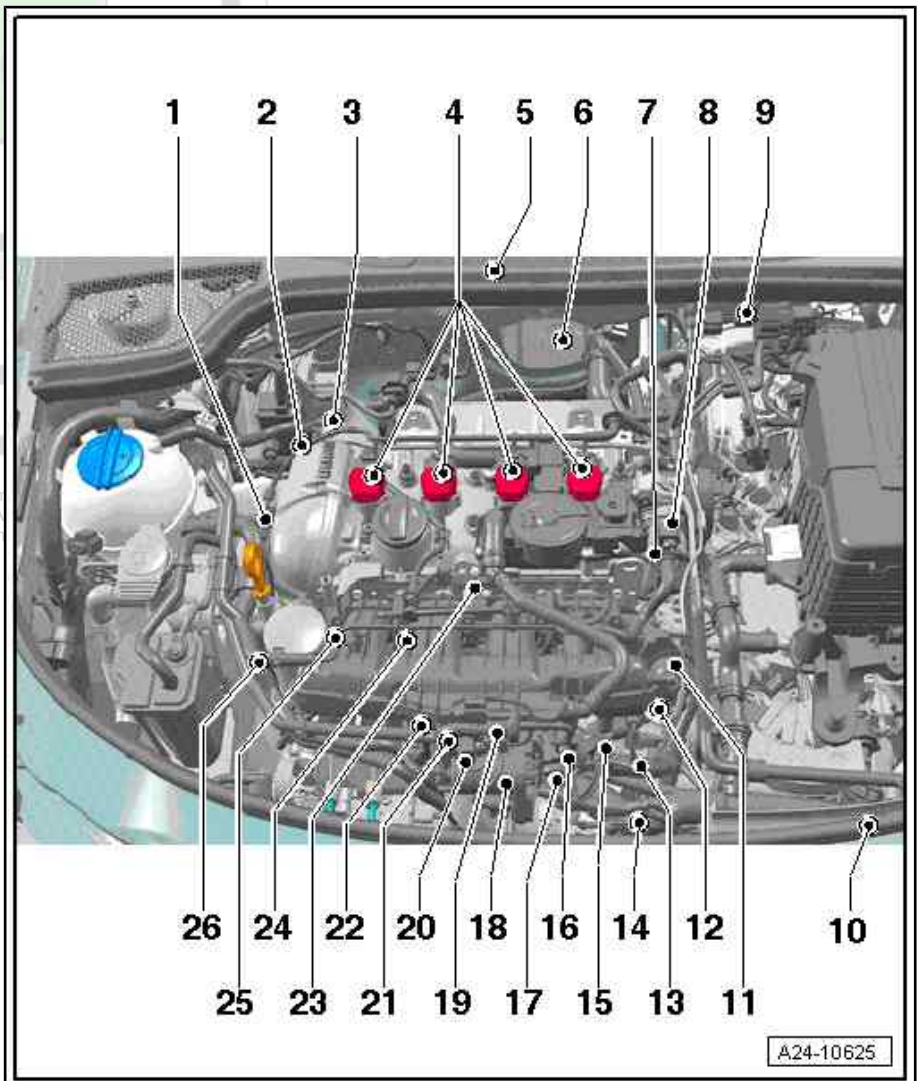
- ❑ screwed onto turbo-charger
⇒ [“1.1 Summary of components - exhaust gas turbocharger”, page 256](#)

3 - Turbocharger divert air valve - N249-

- ❑ screwed onto turbo-charger
⇒ [“1.1 Summary of components - exhaust gas turbocharger”, page 256](#)

4 - Ignition coils with a power output stage

- ❑ Removing and installing
⇒ [“1.2 Removing and installing ignition coils with output stage”, page 342](#)
- ❑ Ignition coil 1 with power output stage - N70-
- ❑ Ignition coil 2 with power output stage - N127-
- ❑ Ignition coil 3 with power





output stage - N291-

- ❑ Ignition coil 4 with power output stage - N292-

5 - Engine control unit - J623-

- ❑ Removing and installing ⇒ [“7 Engine control unit”, page 322](#)

6 - Lambda probe - G39-

- ❑ Engine identification characters BZB: in the pre-exhaust pipe
⇒ [“1.1 Summary of components - exhaust system Octavia II, Superb II with engine identification characters BZB”, page 326](#)
- ❑ Engine identification characters CDAA, CDAB, CCZA: in the pre-exhaust pipe
⇒ [“1.2 Summary of components - exhaust system Octavia II, Superb II with engine identification characters CDAA, CDAB”, page 328](#)

7 - High pressure pump with fuel pressure regulating valve - N276-

- ❑ Removing and installing ⇒ [“4.2 Removing and installing the high pressure pump”, page 311](#)
- ❑ Engines with identification characters CDAA, CDAB
⇒ [Fig. ““High pressure pump, engines with identification characters BZB, CDAA, CDAB””, page 286](#)
- ❑ Engines with identification characters CCZA
⇒ [Fig. ““High pressure pump, engines with identification characters CCZA””, page 286](#)

8 - Control valve for fuel pressure - N276-

- ❑ Component of the high pressure pump

9 - Connector for lambda probe - G39-

- ❑ in the mounting bracket on the front face
- ❑ only with identification characters CDAA, CDAB, CCZA

10 - Coolant temperature sender at radiator outlet - G83-

- ❑ in bottom radiator fitting
⇒ [“1.1 Summary of components - Parts of the cooling system fitted to body”, page 176](#)

11 - Positioning element for valve for intake manifold flap

- ❑ Fitting position ⇒ [Fig. ““Positioning element for valve for intake manifold flap””, page 286](#)

12 - Valve for intake manifold flap - N316-

13 - Engine speed transmitter - G28-

- ❑ Fitting position ⇒ [Fig. ““Engine speed sender -G28-””, page 287](#)
- ❑ Removing and installing ⇒ [“1.4 Removing and installing the engine speed transmitter G28”, page 344](#)

14 - Charge pressure transmitter - G31-

- ❑ screwed onto the charge-air pipe to the throttle flap control unit - J338- :
- ❑ Octavia II, Yeti ⇒ [“2.1.1 Summary of components - charge air cooler Octavia II, Yeti”, page 274](#)
- ❑ Superb II ⇒ [“2.1.2 Summary of components - Charge air cooler Superb II”, page 275](#) .

15 - Plug for knock sensor 1 - G61-

- ❑ Fitting position ⇒ [Fig. ““Contact assignment””, page 287](#)

16 - Plug connection of hall sender - G40-

- ❑ Fitting position ⇒ [Fig. ““Contact assignment””, page 287](#)

17 - Plug for injection valves

- ❑ Fitting position ⇒ [Fig. ““Contact assignment””, page 287](#)

18 - Throttle valve control unit - J338-

- ❑ with throttle valve drive for electronic power control - G186- , angle sensor 1 for throttle valve drive for electronic power control - G187- and angle sensor 2 for throttle valve drive for electronic power control - G188-
- ❑ after replacing, adjust the engine control unit ⇒ Vehicle diagnostic tester
- ❑ Removing and installing ⇒ [“2.7 Removing and installing the throttle valve control unit J338”, page 304](#)
- ❑ clean ⇒ [“2.8 Cleaning throttle valve control unit J338”, page 306](#)

19 - activated charcoal filter solenoid valve 1 - N80-

- ☐ Fitting position ⇒ [Fig. "Activated charcoal filter solenoid valve 1 -N80- ", page 287](#)

20 - Intake air temperature sender - G42-

- ☐ bolted to front intake manifold ⇒ ["2.1 Assembly overview - intake manifold", page 289](#)

21 - Knock sensor 1 - G61-

- ☐ on the front cylinder block, underneath the intake manifold ⇒ [Fig. "Contact assignment", page 287](#)
- ☐ Removing and installing ⇒ ["1.3 Removing and installing knock sensor 1 G61 ", page 344](#)

22 - Coolant temperature transmitter - G62-

- ☐ in housing of coolant pump ⇒ [Fig. "Coolant temperature sender -G62- ", page 288](#)
- ☐ Replace ⇒ ["2.6 Removing and installing coolant temperature transmitter G62 ", page 195](#)

23 - Hall transmitter - G40-

- ☐ screwed onto the front cylinder head cover ⇒ [Fig. "Hall sender -G40- ", page 287](#)

24 - Fuel pressure transmitter - G247-

- ☐ in the fuel distributor ⇒ ["2.2 Summary of components - fuel distributor", page 291](#)
- ☐ Removing and installing ⇒ ["2.6 Removing and installing fuel pressure sender G247 ", page 303](#)

25 - Potentiometer for intake manifold flap - G336-

- ☐ in right intake manifold

26 - Oil pressure switch

- ☐ on engine with identification characters BZB: Oil pressure switch - F1- 0.12 - 0.16 MPa (1.2 - 1.6 bar)
- ☐ on engine with identification characters CDAA, CDAB, CCZA: Oil pressure switch - F22- 0.215 - 0.295 MPa (2.15 - 2.95 bar)
- ☐ in the bracket for auxiliary units
⇒ ["3.1 Summary of components - oil filter/oil pressure switch", page 169](#)
- ☐ Check ⇒ ["3.3 Testing oil pressure and oil pressure switch", page 172](#)

A - Oil pressure switch for reduced oil pressure - F378-

- ☐ only with the engine with identification characters CDAA, CDAB, CCZA
- ☐ Check ⇒ ["3.3 Testing oil pressure and oil pressure switch", page 172](#)

B - Oil pressure control valve - N428-

- ☐ only the engines with identification characters CDAA, CDAB, CCZA
- ☐ in upper part of oil pan ⇒ ["1.1 Assembly overview - pan/oil pump", page 156](#)

C - Air mass meter - G70- and intake air temperature sender 2 - G299-

- ☐ behind the air filter ⇒ ["3.1 Summary of components - air filter", page 307](#)
- ☐ Fitting position ⇒ [Fig. "Air mass meter -G70- ", page 286](#)

D - Lambda probe downstream of catalytic converter - G130-

- ☐ only the engines with identification characters CDAA, CDAB, CCZA
- ☐ in the exhaust pipe
⇒ ["1.2 Summary of components - exhaust system Octavia II, Superb II with engine identification characters CDAA, CDAB ", page 328](#)

E - Accelerator pedal position sender - G79- and accelerator pedal position transmitter 2 - G185-

- ☐ in the interior of the vehicle
- ☐ Removing and installing ⇒ ["2.2 Removing and installing accelerator pedal module", page 250](#)

F - Radiator fan control unit - J293-

- ☐ integrated in the radiator fan - V7-

G - Injection valves

- ☐ Injection valve for cylinder 1 - N30-
- ☐ Injection valve for cylinder 2 - N31-
- ☐ Injection valve for cylinder 3 - N32-
- ☐ Injection valve for cylinder 4 - N33-



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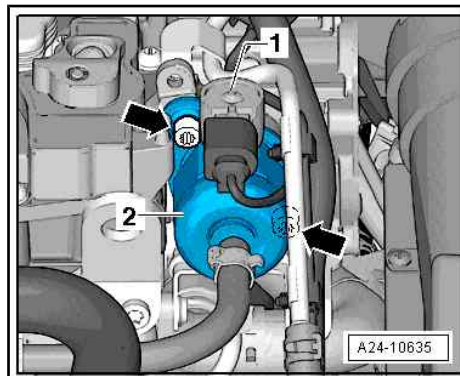
Octavia II 2004 ➤ , Octavia II 2010 ➤ , Superb II 2008 ➤ , Superb II 20 ...

1.8/112; 118 kW; 2.0/147 kW TSI engine - Edition 06.2019

- ❑ in the fuel distributor ➔ [“2.2 Summary of components - fuel distributor”, page 291](#)
- ❑ Removing and installing ➔ [“5.1 Removing and installing injectors”, page 314](#)

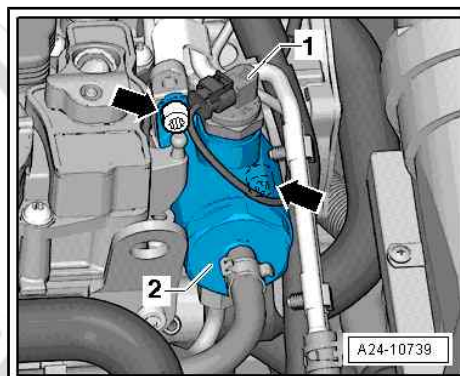
High pressure pump, engines with identification characters BZB, CDAA, CDAB

- 1 - Control valve for fuel pressure - N276-
- 2 - High pressure pump



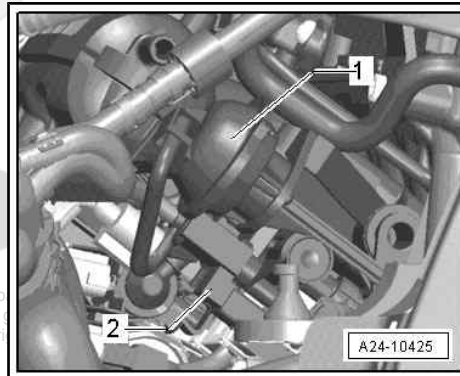
High pressure pump, engines with identification characters CCZA

- 1 - Control valve for fuel pressure - N276-
- 2 - High pressure pump



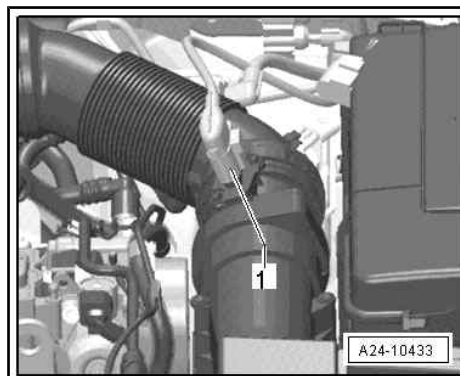
Positioning element for valve for intake manifold flap

- 1 - Positioning element for valve for intake manifold flap
- 2 - Valve for intake manifold flap - N316-



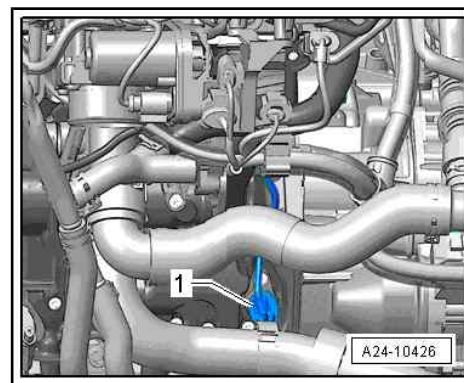
Air mass meter - G70-

- 1 - Air mass meter - G70- and intake air temperature sender 2 - G299-



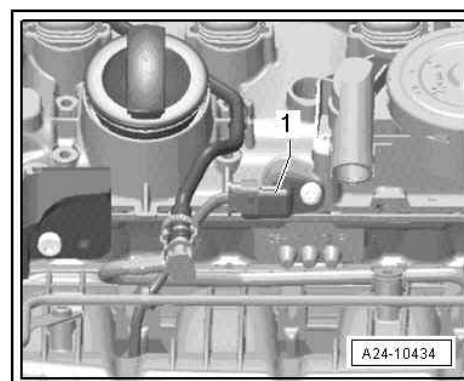
Engine speed sender - G28-

- 1 - Engine speed sender - G28 -



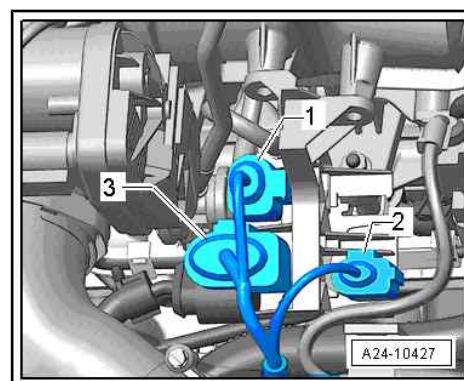
Hall sender - G40-

- 1 - Hall transmitter - G40-



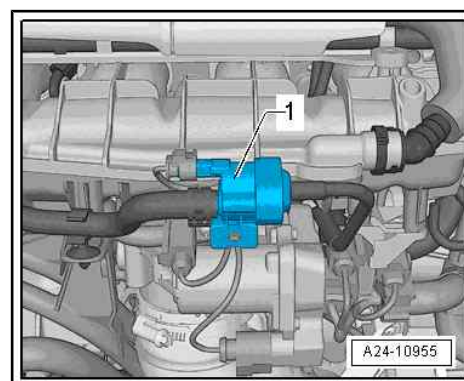
Contact assignment

- 1 - Hall transmitter - G40-
- 2 - for knock sensor 1 - G61-
- 3 - Plug for injection valves



Activated charcoal filter solenoid valve 1 - N80-

- 1 - activated charcoal filter solenoid valve 1 - N80-



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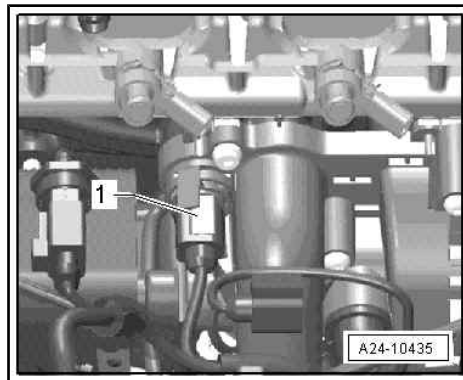
Coolant temperature sender - G62-

1 - Coolant temperature transmitter - G62-



Note

Intake manifold in Fig. 1 is removed.



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2 Intake manifold and fuel distributor

⇒ [“2.1 Assembly overview - intake manifold”, page 289](#)

⇒ [“2.2 Summary of components - fuel distributor”, page 291](#)

⇒ [“2.3 Removing and installing intake manifold”, page 292](#)

⇒ [“2.4 Removing and installing the fuel distributor”, page 298](#)

⇒ [“2.5 Check fuel pressure sender G247 ”, page 299](#)

⇒ [“2.6 Removing and installing fuel pressure sender G247 ”, page 303](#)

⇒ [“2.7 Removing and installing the throttle valve control unit J338 ”, page 304](#)

⇒ [“2.8 Cleaning throttle valve control unit J338 ”, page 306](#)

2.1 Assembly overview - intake manifold



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

1 - Screw

- ☐ 5 Nm

2 - Intake air temperature sender - G42-

3 - activated charcoal filter solenoid valve 1 - N80-

- ☐ with double non-return valve, one building unit
- ☐ the intake manifold must be removed for removing and installing

4 - Intake manifold

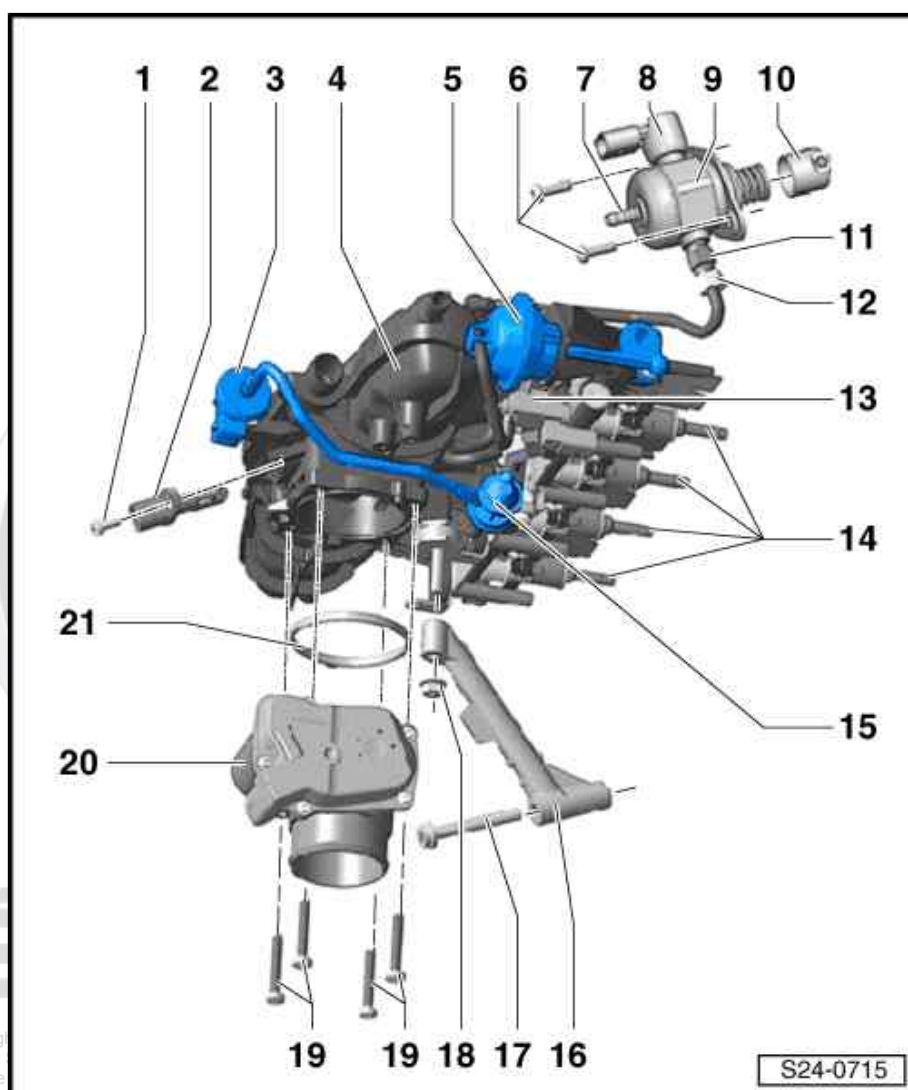
- ☐ Removing and installing
⇒ [“2.3 Removing and installing intake manifold”, page 292](#)

5 - Positioning element for valve for intake manifold flap

- ☐ Check
⇒ [“6.1 Test intake manifold changeover”, page 319](#)

6 - Screws for high pressure pump

- ☐ Replace after disassembly
- ☐ Tightening torque
⇒ [“4.1 Summary of components - high pressure pump”, page 310](#)



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7 - Connection fitting for fuel feed line

8 - Fuel pressure regulating valve - N276-

9 - High pressure pump

- ☐ with fuel pressure regulating valve - N276-
- ☐ Removing and installing ⇒ [“4.2 Removing and installing the high pressure pump”, page 311](#)

10 - Roller tappet

- ☐ can remain inserted into the vacuum pump after removal of the high pressure pump, removable

11 - Connection fitting for high-pressure fuel line

- ☐ Replace after disassembly
- ☐ Tightening torque ⇒ [“4.1 Summary of components - high pressure pump”, page 310](#)

12 - Fuel high pressure line

- ☐ do not install under tension
- ☐ Tightening torque ⇒ [“4.1 Summary of components - high pressure pump”, page 310](#)

13 - Valve for intake manifold flap - N316-

14 - Injection valves

- ☐ The intermediate ring -1- and mount -2- do not belong to the scope of supply of the new injection valve
⇒ [Fig. “Injection valve - individual parts”, page 292](#)
- ☐ When replacing the injection valve, the intermediate ring -1- and mount -2- must be ordered later from the injection valve repair kit ⇒ ETKA - Electronic Catalogue of Original Parts .
- ☐ Replace the O-ring -6- and combustion chamber seal -3- (Teflon seal)
⇒ [Fig. “Injection valve - individual parts”, page 292](#)
- ☐ Removing and installing ⇒ [“5.1 Removing and installing injectors”, page 314](#)

15 - Double non-return valve

- ☐ Attachment on intake manifold ⇒ [“3.1 Assembly overview - activated charcoal filter system”, page 253](#)
- ☐ Check ⇒ [“6.2 Check the double non-return valve”, page 320](#)
- ☐ a component with activated charcoal filter solenoid valve 1 - N80-
⇒ [“3.1 Assembly overview - activated charcoal filter system”, page 253](#)

16 - Intake manifold support

17 - Screw

- ☐ 23 Nm

18 - Nut

- ☐ 10 Nm

19 - Screws

- ☐ 7 Nm

20 - Throttle valve control unit - J338-

- ☐ with throttle valve drive for electronic power control - G186- , angle sensor 1 for throttle valve drive for electronic power control - G187- and angle sensor 2 for throttle valve drive for electronic power control - G188-
- ☐ after replacement, erase adapted values and adapt engine control unit to the throttle valve control unit
⇒ [Vehicle diagnostic tester](#)
- ☐ Removing and installing ⇒ [“2.7 Removing and installing the throttle valve control unit J338”, page 304](#)
- ☐ clean ⇒ [“2.8 Cleaning throttle valve control unit J338”, page 306](#)

21 - Sealing ring

- ☐ replace
- ☐ the peg of the gasket ring must be in the appropriate groove of the intake manifold

2.2 Summary of components - fuel distributor



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

1 - Injector

- ☐ The intermediate ring -1- and mount -2- do not belong to the scope of supply of the new injection valve
⇒ [Fig. "Injection valve - individual parts", page 292](#)
- ☐ When replacing the injection valve, the intermediate ring -1- and mount -2- must be ordered later from the injection valve repair kit ⇒ ETKA - Electronic Catalogue of Original Parts
- ☐ Replace the O-ring -6- and combustion chamber seal -3- (Teflon seal)
⇒ [Fig. "Injection valve - individual parts", page 292](#)
- ☐ Removing and installing
⇒ ["5.1 Removing and installing injectors", page 314](#)

2 - Support ring

3 - Fuel distributor

- ☐ Removing and installing
⇒ ["2.4 Removing and installing the fuel distributor", page 298](#)

4 - High pressure pump

- ☐ with fuel pressure regulating valve - N276-
- ☐ Before removing the high-pressure pump, the fuel pressure must be reduced to residual pressure
⇒ ["2.3 Reducing pressure in the high pressure system", page 4](#)
- ☐ Do not install high-pressure fuel line under tension
- ☐ when installing the high pressure pump, ensure that no dirt can get into the fuel system.
- ☐ Removing and installing ⇒ ["4.2 Removing and installing the high pressure pump", page 311](#)
- ☐ Tightening torque ⇒ ["4.1 Summary of components - high pressure pump", page 310](#)

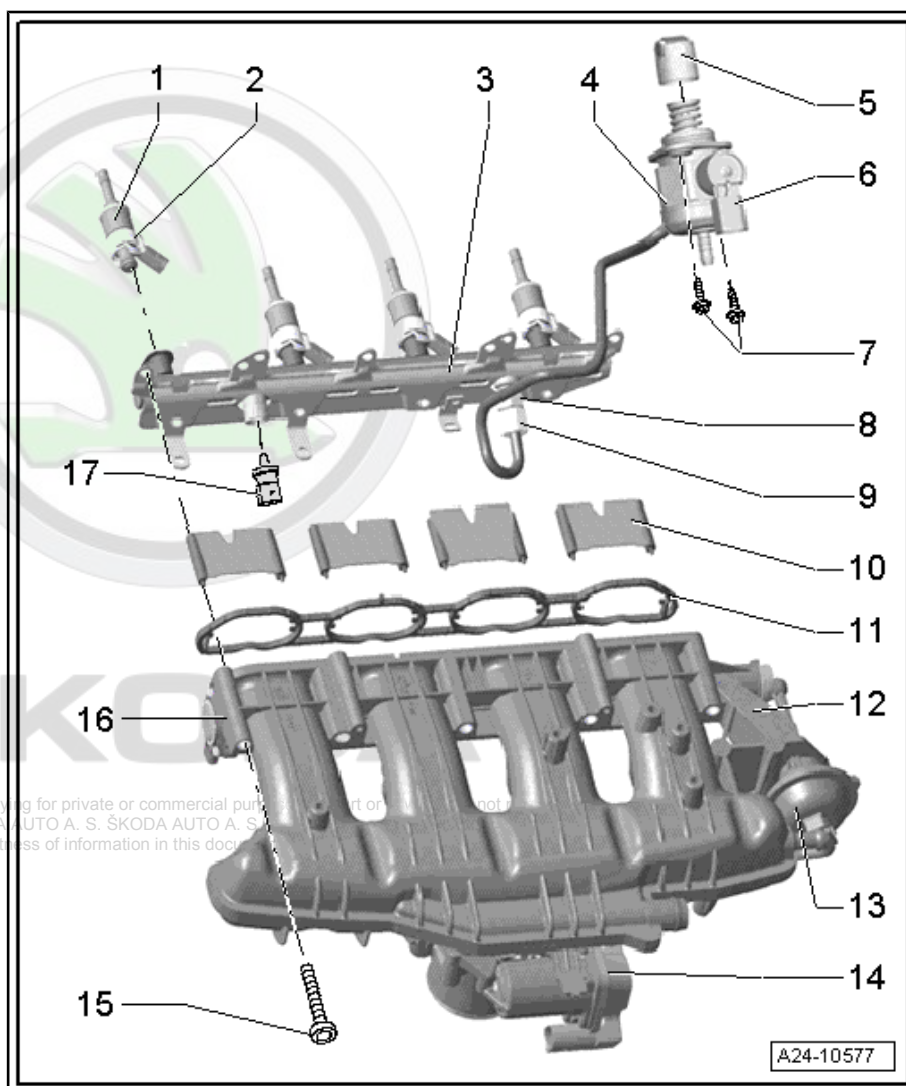
5 - Roller tappet

- ☐ can remain inserted into the vacuum pump after removal of the high pressure pump, removable

6 - Control valve for fuel pressure - N276-

7 - Screws for high pressure pump

- ☐ Replace after disassembly
- ☐ Tightening torque ⇒ ["4.1 Summary of components - high pressure pump", page 310](#)





8 - Connection fitting for fuel feed line

- ☐ when loosening the union nut or the connecting piece, replace the connection piece
- ☐ 40 Nm

9 - Union nut in the fuel feed line

- ☐ 27 Nm

10 - Intake manifold flaps

11 - Seal

- ☐ replace

12 - Intake manifold

- ☐ Removing and installing ⇒ [“2.3 Removing and installing intake manifold”, page 292](#)

13 - Positioning element for valve for intake manifold flap

14 - Throttle valve control unit - J338-

- ☐ with throttle valve drive for electronic power control - G186- , angle sensor 1 for throttle valve drive for electronic power control - G187- and angle sensor 2 for throttle valve drive for electronic power control - G188-
- ☐ after replacement, erase adapted values and adapt engine control unit to the throttle valve control unit ⇒ Vehicle diagnostic tester
- ☐ Removing and installing ⇒ [“2.7 Removing and installing the throttle valve control unit J338 ”, page 304](#)
- ☐ clean ⇒ [“2.8 Cleaning throttle valve control unit J338 ”, page 306](#)

15 - Screws for the intake manifold

- ☐ firstly, pre-tighten all screws to 3 Nm, and then pre-tighten to 9 Nm

16 - Potentiometer for intake manifold flap - G336-

- ☐ when replacing, adapt engine control unit to potentiometer for intake manifold flap ⇒ Vehicle diagnostic tester

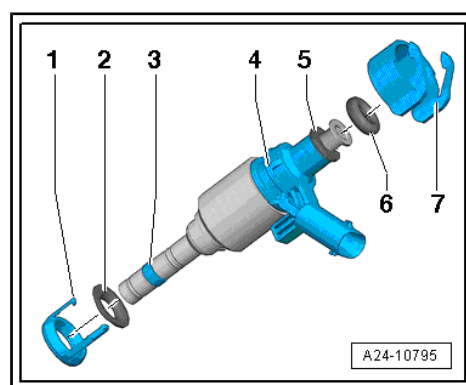
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17 - Fuel pressure transmitter - G247-

- ☐ Moisten thread with clean engine oil
- ☐ Check ⇒ [“2.5 Check fuel pressure sender G247 ”, page 299](#)
- ☐ Removing and installing ⇒ [“2.6 Removing and installing fuel pressure sender G247 ”, page 303](#)
- ☐ 27 Nm

Injection valve - individual parts

- 1 - Intermediate ring - replace
- 2 - Support
- 3 - Teflon seal for combustion chamber. When installing, the combustion chamber sealing ring must not be greased or treated with any other lubricant.
- 4 - Injector
- 5 - Supporting ring - replace
- 6 - O-ring - replace. Before fitting moisten lightly with clean engine oil
- 7 - Supporting element (the fuel distributor exerts a force via this supporting element, which holds the injector in the cylinder head)



2.3 Removing and installing intake manifold

Special tools and workshop equipment required

- ◆ Oil filter tool - 3417-
- ◆ Socket - T10347-

Safety precautions when working on the fuel supply system
⇒ [“2.1 Safety precautions when working on fuel supply system”, page 3](#) .

Be mindful of safety measures when working on the fuel injection and ignition system

⇒ [“2.2 Safety measures to apply when working on the fuel injection and ignition system”, page 3](#) .

Observe rules for cleanliness

⇒ [“3.1 Rules of cleanliness”, page 6](#) .



Note

- ◆ *When replacing the intake manifold, the potentiometer for intake manifold flap - G336- must be adapted to the engine control unit - J623- ⇒ Vehicle diagnostic tester.*
- ◆ *To access the injection valve, the intake manifold with fuel distributor must be removed first.*
- ◆ *The combustion chamber seal (Teflon seal) and O-ring must be replaced
⇒ [Fig. “Injection valve - individual parts””, page 292](#)*

Removing

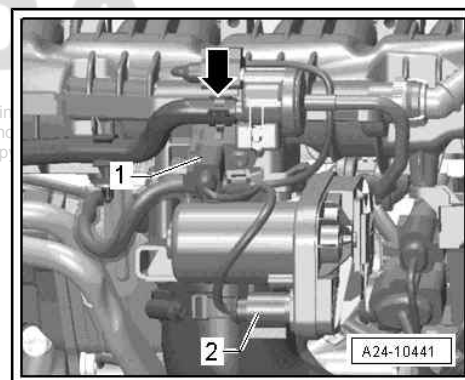


CAUTION

The fuel system is under pressure! Before opening the injection system high-pressure system, the fuel pressure must be reduced to residual pressure

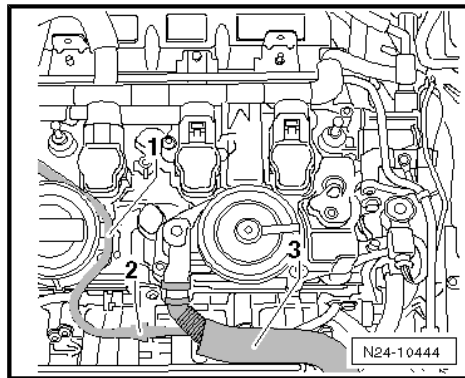
⇒ [“2.3 Reducing pressure in the high pressure system”, page 4](#) .

- Remove air filter housing
⇒ [“3.2 Removing and installing air filter housing”, page 308](#) .
- Clean the transition from the intake manifold to the cylinder head.
- Disconnect the vacuum line -arrow- to the activated charcoal filter.
- Unplug the connectors from the following parts:
 - ◆ Intake air temperature sender - G42- -1-.
 - ◆ Throttle valve control unit - J338- -2-.
 - ◆ Activated charcoal filter solenoid valve 1 - N80- .
 - ◆ Hall encoder - G40- .





- Disconnect the vacuum line -1- at the separation point -2- and remove the hose for crankcase ventilation -3-.



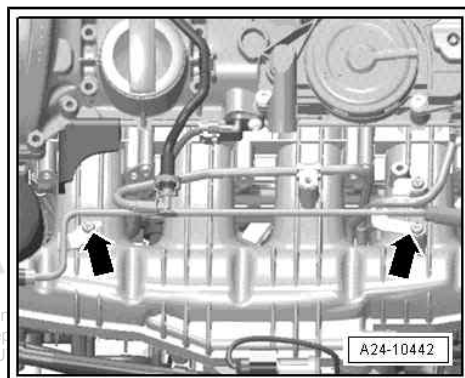
- Unscrew the screws -arrows- on the fuel feed line, and place the cable to one side.

CAUTION

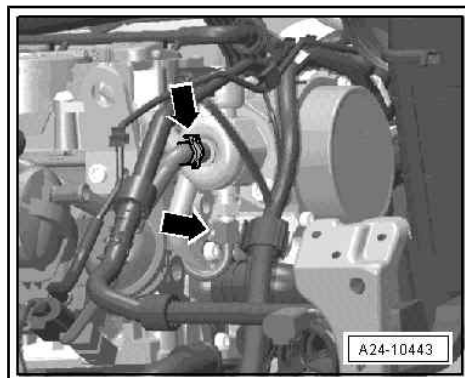
The fuel lines are pressurised.

Risk of injury from ejected fuel.

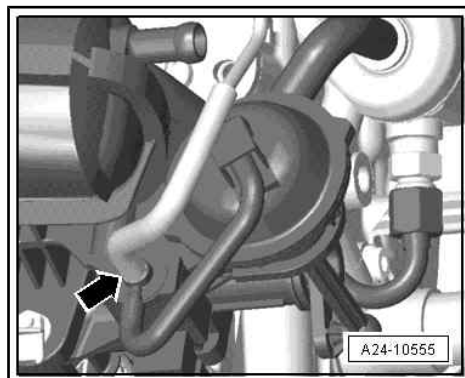
- ◆ Wear safety goggles.
- ◆ Wear protective gloves.
- ◆ Before opening the high pressure system, lay cleaning cloths around the connection point.



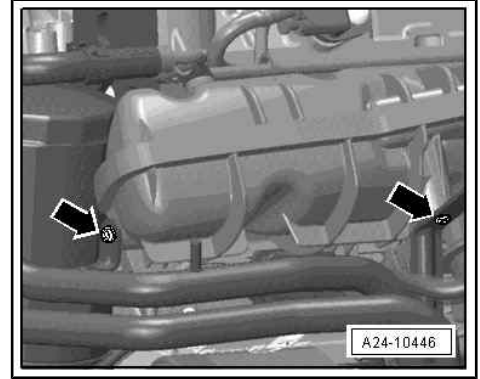
- Unscrew the union nut on the fuel line -bottom arrow- at the high pressure pump.



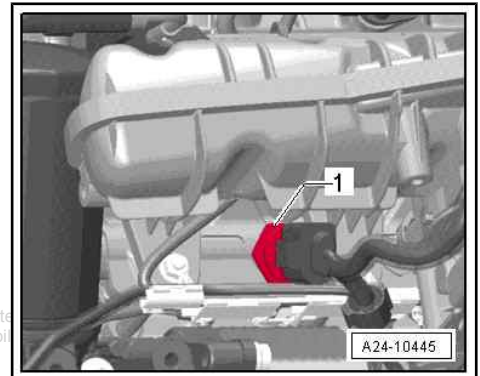
- Remove vacuum cable -arrow- at the valve for intake manifold flap - N316- .



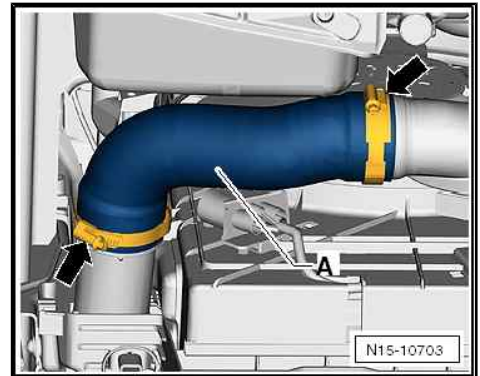
- Undo screws -arrows- of the coolant line at the intake manifold.



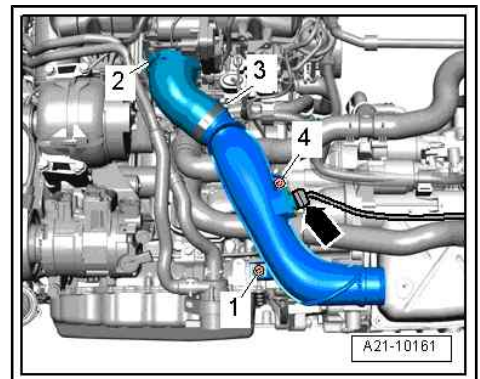
- Remove the connector from the fuel pressure sender - G247-1-.
- Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .



- Open clamps -arrows- and remove charge air hose -A-.



- Loosen clamp -2-.
- Disconnect the connector -arrow- from the charge pressure sender - G31- .
- Loosen clamp at charge air pipe.
- Unscrews the screws -1- and -4- and remove the charge-air pipe with the hose downwards.



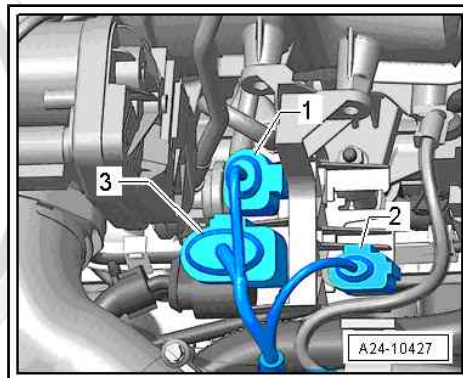


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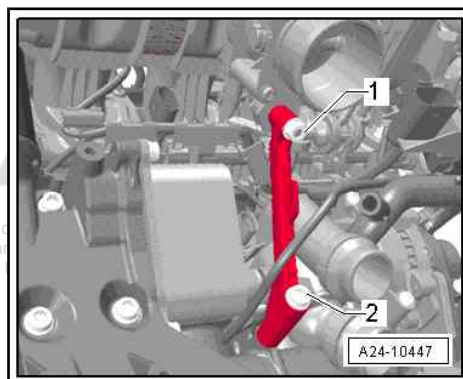
Octavia II 2004 ➤ , Octavia II 2010 ➤ , Superb II 2008 ➤ , Superb II 20 ...

1.8/112; 118 kW; 2.0/147 kW TSI engine - Edition 06.2019

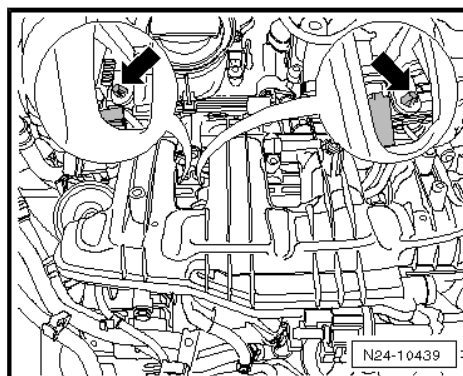
- Disconnect the connectors -1- to -3- and unscrew the mounting bracket from the intake manifold.



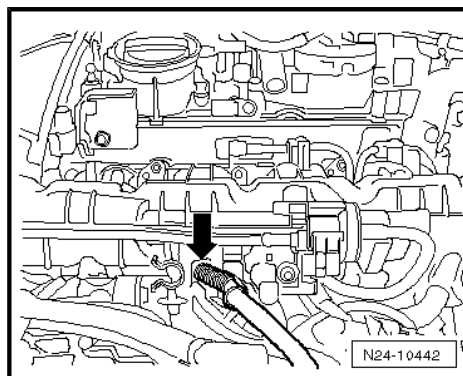
- Unscrew the nuts -1-, unscrew the screw -2- and remove the intake manifold support.
- Unscrew the oil filter with the oil filter removal tool - 3417- .
- Cover the oil filter holder.



- Detach cable holder -arrows-.

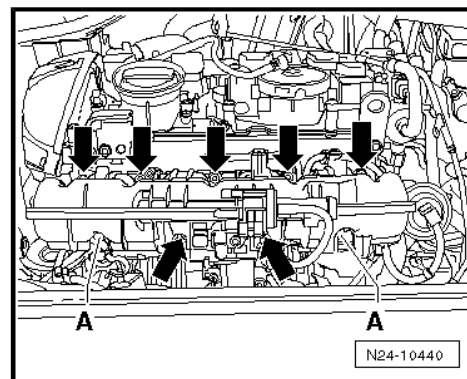


- Undo cable -arrow- from the intake manifold.



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- Unscrew nuts -A-.
- Unscrew screws -arrows- with Polydrive socket - T10347- .
- Carefully detach the intake manifold with fuel distributor from the cylinder head.



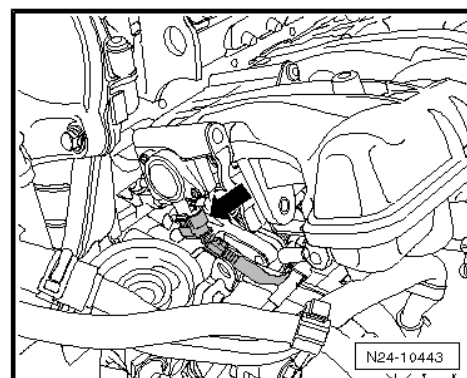
- Remove the connector -arrow- from the potentiometer for intake manifold flap - G336- and remove the intake manifold.
- Close air intake channels with clean cloths.



Note

The injection valves can remain inserted in the fuel distributor.

- Unscrew the fuel distributor from the intake manifold
⇒ [“2.4 Removing and installing the fuel distributor”, page 298](#) .



Installing

- The injection valves sit in the cylinder head. Install injection valves ⇒ [“5.1 Removing and installing injectors”, page 314](#) .
- Slide the suction pipe over the stud bolts (left and right) on the cylinder head.



Note

Make sure the injection valves are in the correct fitting position; watch out for the cable holder (underneath the intake manifold) when fitting the intake manifold.

When installing the intake manifold, if the intake manifold needs to be removed slightly from the cylinder head, and as a result, if the injection valves remain inserted in the fuel distributor:

- Remove the injection valves from the fuel distributor and re-insert them into the cylinder head.

Further installation occurs in reverse order. However, pay attention to the following:

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Clip in all latches when latching the cable holder to the intake manifold.

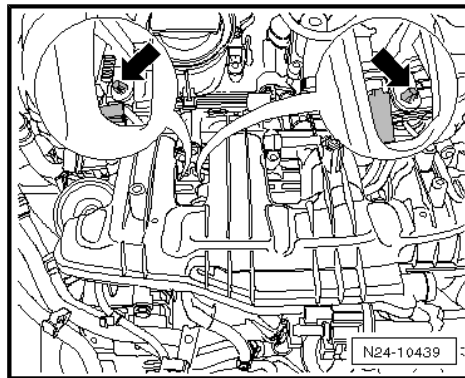
Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

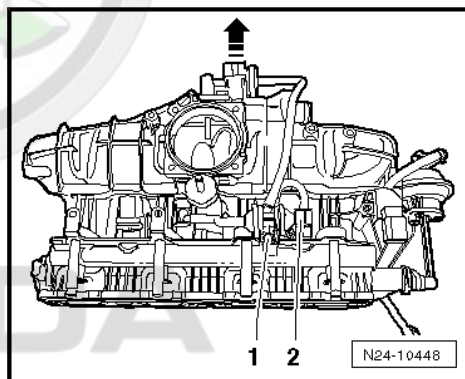
- ◆ Charge air pipe
⇒ ["2.1 Summary of components - charge air cooler", page 274](#) .
- ◆ Union nut for fuel line
⇒ ["4.1 Summary of components - high pressure pump", page 310](#) .
- ◆ Intake manifold support
⇒ ["2.1 Assembly overview - intake manifold", page 289](#) .
- ◆ Oil filter
⇒ ["3.1 Summary of components - oil filter/oil pressure switch", page 169](#) .
- ◆ Intake manifold
⇒ ["2.2 Summary of components - fuel distributor", page 291](#) .



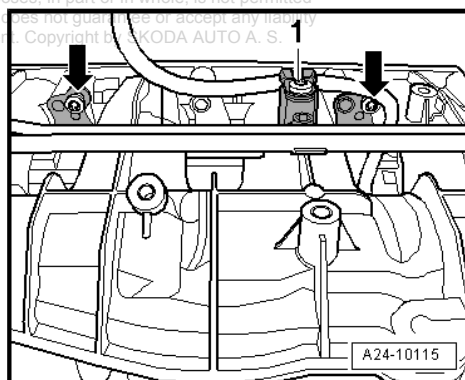
2.4 Removing and installing the fuel distributor

Removing

- Removing the intake manifold
⇒ ["2.3 Removing and installing intake manifold", page 292](#) .
- Remove solenoid valve 1 for activated charcoal filter - N80-
-arrow- from the mounting bracket.
- Remove the double non-return valve-1- and fuel line -2-.

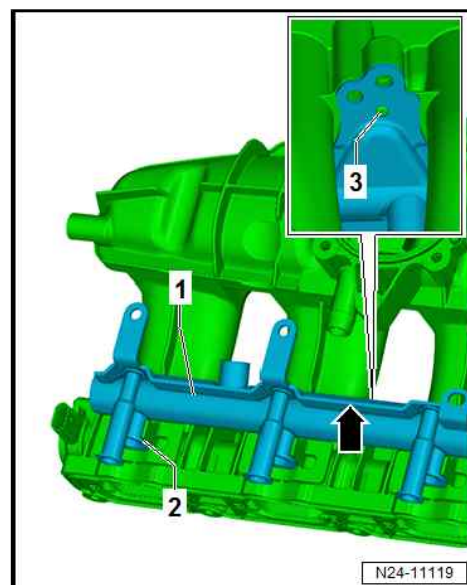


- Open the hose clamp -1-.
- Unscrew both screws -arrows- at the bottom.
- Remove the fuel distributor from the intake manifold.



Installing

- Push the fuel distributor -1- into the supports -2- until it stops.
- Push the fuel distributor in the direction of the -arrow- in such a way that the clips -3- engage into the top part of the intake manifold.



- Tighten the two fuel distributor screws -arrows-.

Further installation occurs in reverse order.

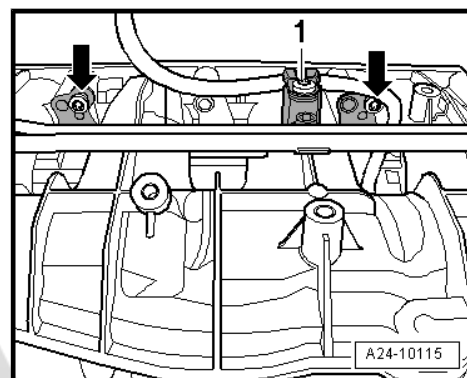
Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Fuel distributor
⇒ [“2.2 Summary of components - fuel distributor”, page 291](#) .



2.5 Check fuel pressure sender - G247-

Special tools and workshop equipment required

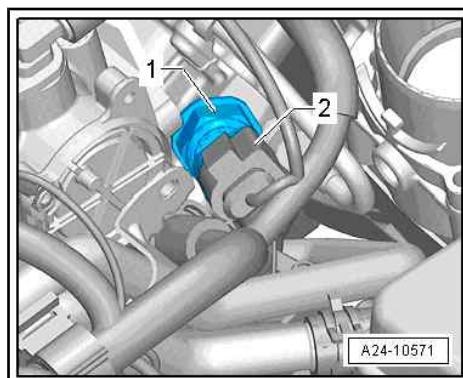
- ◆ Assembly tool - T10118-
- ◆ Open ring spanner with 3/8" drive, SW 27 mm
- ◆ Pressure sensor tester , e.g. -VAS 6394- (contains pressure manometer - VAS 6394/1-)
- ◆ Adapter e.g. -VAS 6394/2-
- ◆ Test adapter , e.g. -VAS 5570-

If the fuel pressure sender - G247- fails, the fuel pressure regulating valve - N276- cuts out, the electric fuel pump is activated fully and the pressure in the fuel distributor is adapted to the pressure in the fuel low pressure area. This results in poor carburetion, torque reduction and irregular engine running.



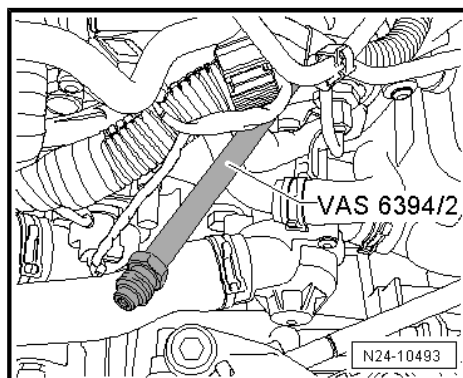
Work procedure

- Remove fuel pressure sender - G247- -1-
⇒ [“2.6 Removing and installing fuel pressure sender G247 ”, page 303](#) .



- Moisten the sealing cone of the adapter - VAS 6394/2- with clean engine oil and screw it into the fuel distributor.

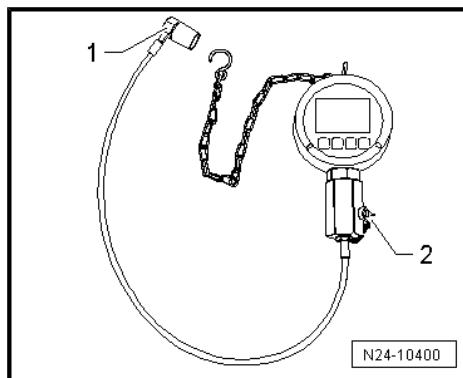
Tightening torque 22 Nm.



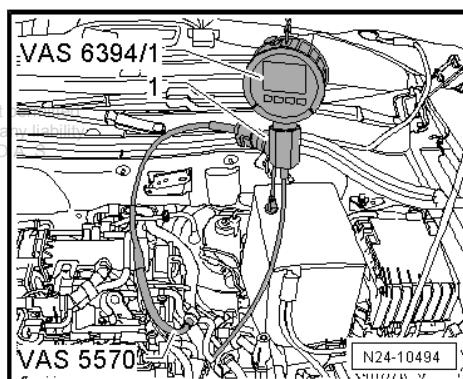
- Release the screw plug -2- and screw the fuel pressure sender - G247- into the tester - VAS 6394/1- .

Tightening torque 22 Nm.

- Screw pressure line -1- of the digital pressure gauge - VAS 6394/1- onto the adapter - VAS 6394/2- until hand-tight.



- Connect the test adapter - VAS 5570- to the fuel pressure sender - G247- -1- and to the plug.

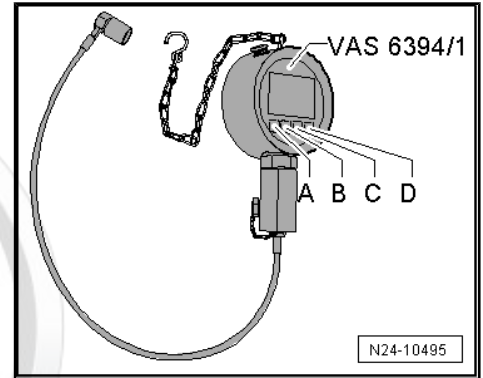


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- Switch on the tester - VAS 6394/1- , for this step, briefly press the button -A- once.

 Note

- ◆ *If the button -A- is pressed for 2 seconds, the illumination is switched on for 20 seconds.*
- ◆ *If the tester - VAS 6394/1- does not indicate 0 MPa (0 bar), carry out a zero point of the balance by means of the ⇒ Owner's Manual .*



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- Connect the vehicle diagnosis, measurement and information system VAS/ODIS -1- to the diagnostic connection.
- Switch on the ignition.
- Perform engine control unit identification.

For vehicles with engine control unit with "KWP communication protocol"

- On the display press consecutively the following buttons:

Vehicle self-diagnosis

Self-diagnosis ►

01 - Engine Electronics ►

011 - Measured values ►

- Select measured value block 1 4 0 and confirm with Q.

The actual value which is transmitted to the vehicle by the fuel pressure sender - G247- is shown in the display field 3.

For vehicles with engine control unit with "UDS communication protocol"

- On the display press consecutively the following buttons:

Targeted functions

CDAA, CDAB CCZA engine (UDS) ►

Reading measured value block ►

The actual value which is transmitted to the vehicle by the fuel pressure sender - G247- is shown in the display field high pressure fuel, actual value.

Continued for all vehicles

- Start engine.
- Compare the displayed pressure on the digital manometer - VAS 6394/1- with the actual value on the vehicle diagnosis, measurement and information system VAS/ODIS .
- The pressures may deviate maximum 0.5 MPa (5 bar) from one another.

If the deviation is greater than 0.5 MPa (5 bar):

- Perform a vehicle diagnosis, measurement and information system VAS of the guided function "remove high fuel pressure".
- Replace fuel pressure sender - G247- .
- Repeat the test with the new fuel pressure sender - G247- and compare both measured values.

If the measured values do not correspond again

- Perform a cable testing ⇒ Vehicle diagnostic tester

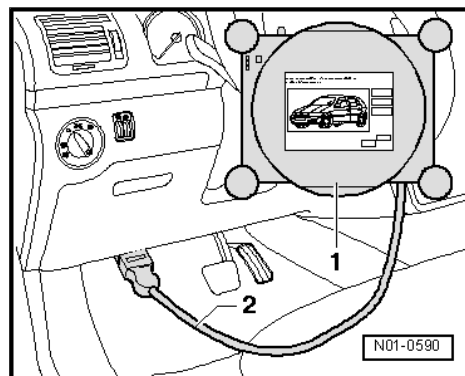
Tightening torques - summaries of components

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Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.



- ◆ Fuel pressure sender - G247-
⇒ [“2.2 Summary of components - fuel distributor”, page 291](#) .

2.6 Removing and installing fuel pressure sender - G247-

Special tools and workshop equipment required

- ◆ Assembly tool - T10118-
- ◆ Socket size 27 - T40218-

Removing

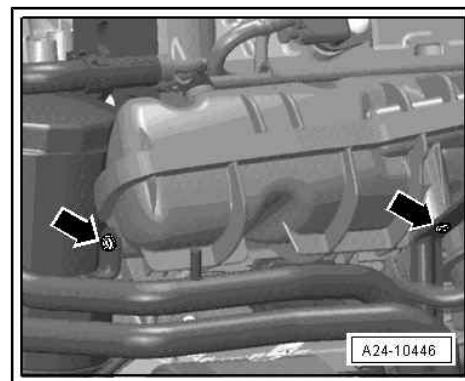
Observe safety measures when working on the fuel system
⇒ [“2.1 Safety precautions when working on fuel supply system”, page 3](#) .

Observe rules for cleanliness
⇒ [“3.1 Rules of cleanliness”, page 6](#) .

CAUTION

The fuel system is under pressure! Before opening the injection system high-pressure system, the fuel pressure must be reduced to residual pressure
⇒ [“2.3 Reducing pressure in the high pressure system”, page 4](#) .

- Switch off ignition and all electrical loads, and pull out ignition key.
- Remove engine cover
⇒ [“1.5 Removing and installing engine trim panel”, page 21](#) .
- Unscrew screws -arrows- of the coolant line at the intake manifold and shift the line downward.



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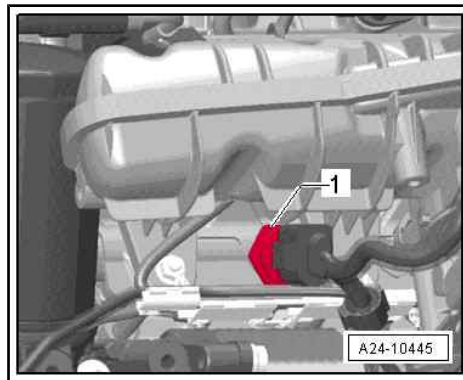
- Using the assembly tool - T10118- remove the plug at the fuel pressure sender - G247- -1-.

⚠ CAUTION

The fuel lines are pressurised.

Risk of injury from ejected fuel.

- ◆ Wear safety goggles.
- ◆ Wear protective gloves.
- ◆ Before opening the high pressure system lay a clean cleaning cloth around the connection point.



- Unscrew the fuel pressure sender - G247- with the socket insert size 27 - T40218- .



Note

Close the fuel distributor hole immediately with a suitable screw plug in order to prevent dirt from penetrating.

- Collect the fuel which flows out with a cloth.

Installing

The installation occurs in reverse order.

Tightening torques - summaries of components



Note

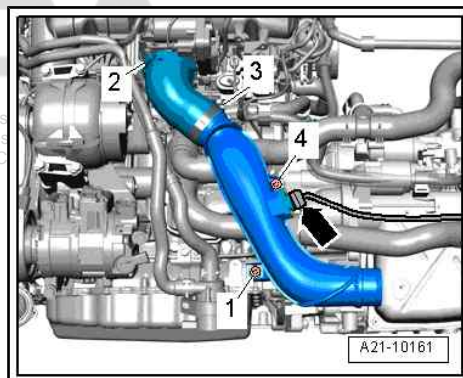
Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Fuel pressure sender - G247-
⇒ ["2.2 Summary of components - fuel distributor", page 291](#) .

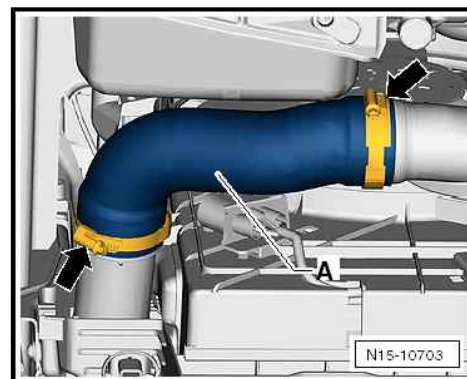
2.7 Removing and installing the throttle valve control unit - J338-

Removing

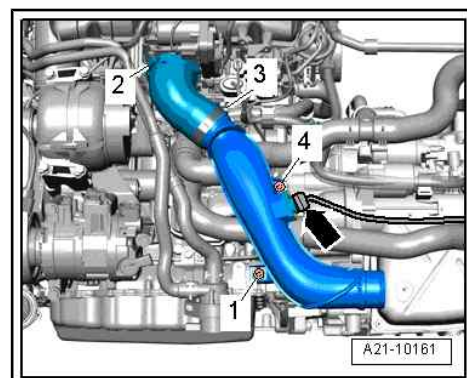
- Loosen hose clamp -2-.
- Remove screw -4-.
- Unplug connector -arrow-.
- Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .



- Open clamps -arrows- and remove charge air hose -A-.



- Unscrew bolt -1- and remove the charge-air pipe by moving it downwards.



- Disconnect the plug -1- from the throttle valve control unit - J338- .
- Release screws -arrows- and remove throttle valve control unit - J338- .

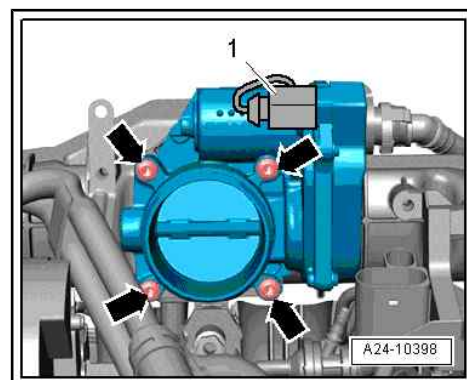
Installing

The installation occurs in reverse order. However, pay attention to the following:

- Clean the original throttle valve control unit - J338- before re-installing it
⇒ [“2.8 Cleaning throttle valve control unit J338”, page 306](#) .
- Clean the sealing flange for the gasket ring.

– Replace sealing ring.

If a new throttle flap control unit - J338- was installed, adjust the engine control unit to the throttle flap control unit - J338- ⇒ Vehicle diagnostic tester.



Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Throttle valve control unit - J338-
⇒ [“2.1 Assembly overview - intake manifold”, page 289](#) .
- ◆ Charge air pipe
⇒ [“2.1 Summary of components - charge air cooler”, page 274](#) .

2.8 Cleaning throttle valve control unit - J338-

Special tools and workshop equipment required

- ◆ Acetone

Observe rules for cleanliness

⇒ ["3.1 Rules of cleanliness", page 6](#) .



Note

When cleaning the throttle valve housing it must not be scratched.

Work procedure

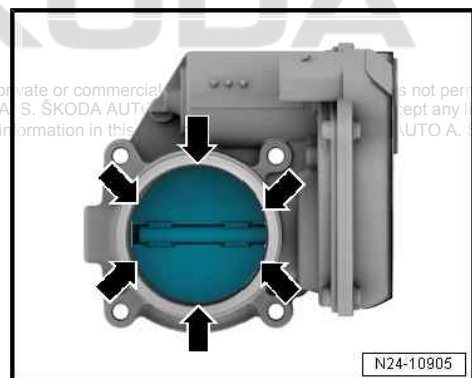
- Remove throttle valve control unit
⇒ ["2.7 Removing and installing the throttle valve control unit J338", page 304](#) .
- Open throttle valve by hand and lock in open position using wood or a plastic wedge -arrow-.

CAUTION

Acetone is highly inflammable. Observe accident prevention regulations and safety notes when handling highly inflammable fluids. Do not use compressed air when cleaning throttle valve. Wear safety goggles and safety clothing, in order to avoid injuries and skin contact with fuel.



- Thoroughly clean the throttle valve housing using Acetone and a paint brush, particularly in the area -arrows- of the closed throttle valve.
- Wipe the throttle valve housing with a fluffy cloth.
- Let the acetone dry off completely and re-install the cleaned throttle valve control unit.
- Erase initialisation values and adapt the engine control unit - J623- to the throttle valve control unit ⇒ Vehicle diagnostic tester.



3 Air filter

⇒ [“3.1 Summary of components - air filter”, page 307](#)

⇒ [“3.2 Removing and installing air filter housing”, page 308](#)

3.1 Summary of components - air filter

Removing and installing air filter housing

⇒ [“3.2 Removing and installing air filter housing”, page 308](#) .

1 - Spring clip

2 - intake hose

- ☐ to exhaust gas turbo-charger

3 - Air mass meter - G70- and
intake air temperature sender
2 - G299-



Note

If the air filter element is heavily contaminated or soaked through, dirt particles or moisture may get into the air flow sensor - G70- and intake air temperature sender 2 - G299-, distorting the air flow measurement. This leads to a loss of power because less injected quantity is calculated.

4 - Screws

- ☐ Captive screws for upper part of the air filter
- ☐ 2 Nm

5 - Screws

- ☐ Captive screws for upper part of the air filter
- ☐ 2 Nm

6 - Air filter top part

7 - Filter element

8 - Screws

- ☐ Captive screws for lower part of the air filter
- ☐ 8 Nm

9 - Snow strainer

- ☐ Not installed in all vehicles

10 - Air filter bottom part

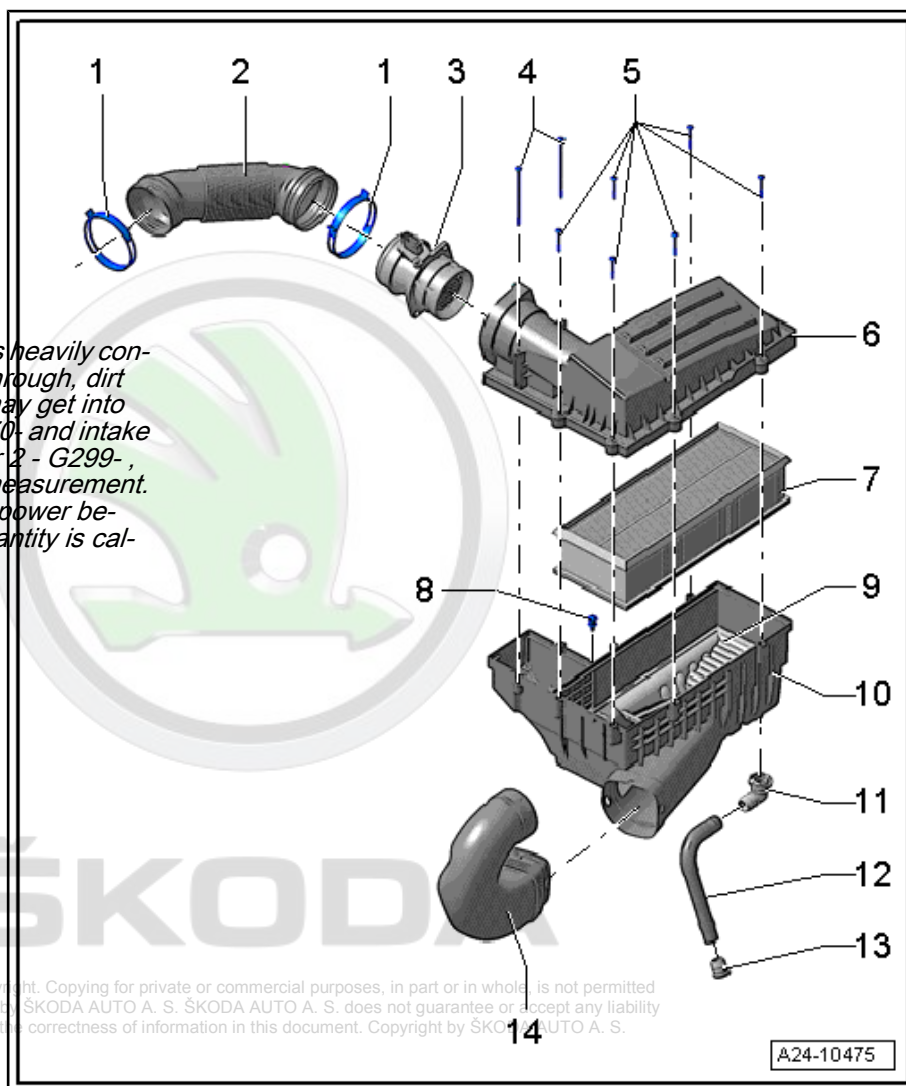
- ☐ remove salt residues, dirt and leaves from the lower part of the air filter

11 - Connection for the water drain hose

- ☐ clean the connection

12 - Water drain hose

- ☐ clean the water drain hose





13 - Overrun valve

14 - Connecting hose

- ☐ to the lock carrier
- ☐ remove dirt and leaves from the connecting hose

3.2 Removing and installing air filter housing

Special tools and workshop equipment required

- ◆ Pliers for spring-type clips

Removing

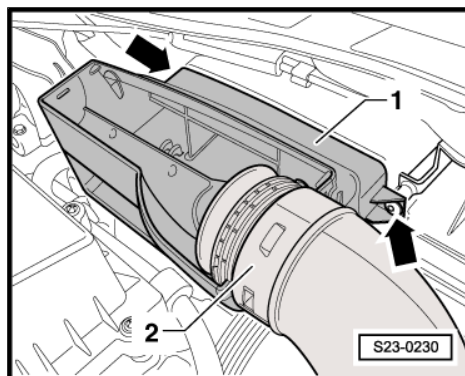
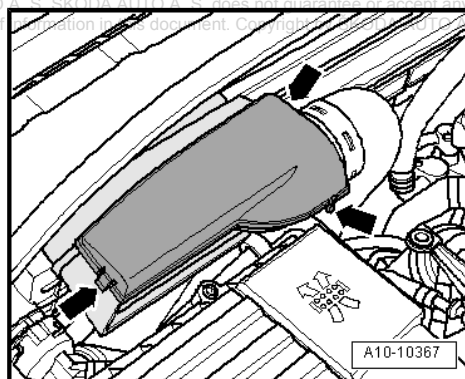


Note

For the following work, we recommend you disconnect the suction hose from the intake manifold.

- Remove engine cover
⇒ ["1.5 Removing and installing engine trim panel", page 21](#)
- Remove cover for connection fitting, to do so release lateral retaining clasps -arrows-.

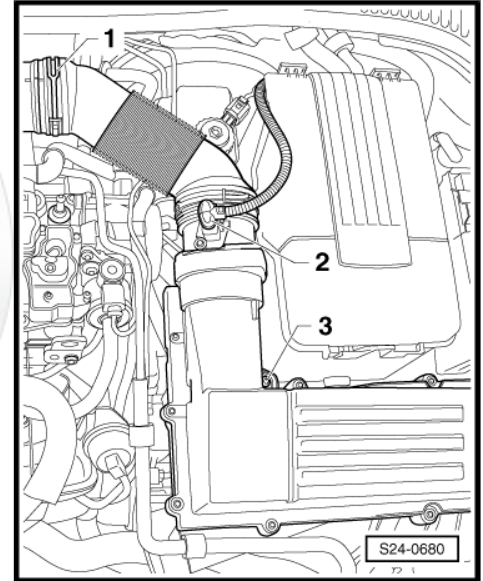
- Release screws -arrows- for inlet connection -1- and take connecting hose-2- out of the guide.
- Remove inlet connection -1-.



- Remove connector -2- from the airflow meter - G70- and intake air temperature sender 2 - G299- .
- Open and remove spring-type clip -1-.
- Remove screw -3-.
- Loosen the air filter housing at the two mandrels and remove towards the top and underneath the top coolant hose.

Installing

- The installation occurs in reverse order.



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4 High pressure pump

⇒ ["4.1 Summary of components - high pressure pump", page 310](#)

⇒ ["4.2 Removing and installing the high pressure pump", page 311](#)

4.1 Summary of components - high pressure pump



Note

- ◆ Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.
- ◆ Note the different versions of the connection fitting on the high-pressure fuel line.

1 - O-ring

- ☐ replace

2 - Roller tappet

- ☐ can remain inserted into the vacuum pump after removal of the high pressure pump, removable

3 - Connecting fitting on the high-pressure fuel line (with female thread)

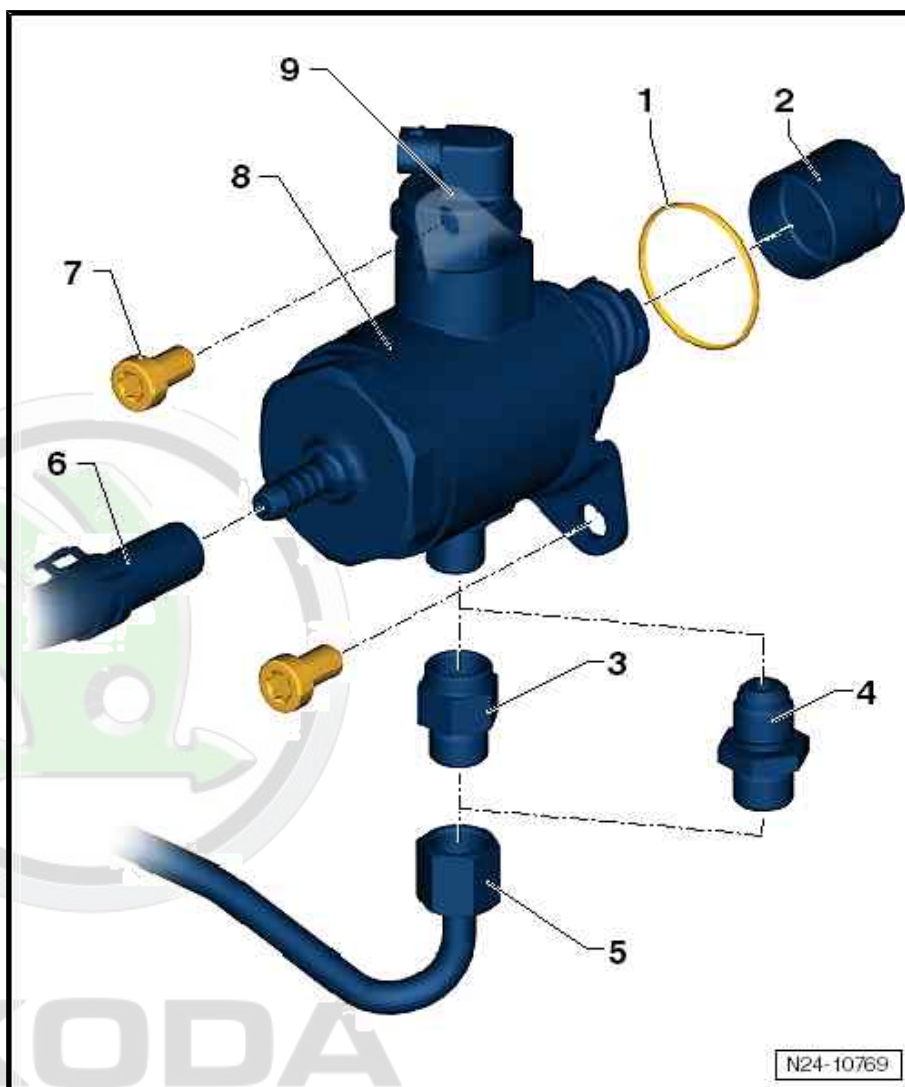
- ☐ when loosening the union nut or the connecting piece, replace the connection piece
- ☐ when undoing the union nut Pos. -5- hold the connection fitting in place
- ☐ 25 Nm

4 - Connecting fitting on the high-pressure fuel line (with male thread)

- ☐ when loosening the union nut or the connecting piece, replace the connection piece
- ☐ when undoing the union nut Pos. -5- hold the connection fitting in place
- ☐ 40 Nm

5 - Union nut for high-pressure fuel line

- ☐ when loosening the union nut, hold the connection fitting in place
- ☐ Do not install high-pressure fuel line under tension
- ☐ Tightening torque with connection piece installed pos. 3: 18 Nm
- ☐ Tightening torque with connection piece installed pos. 4: 27 Nm



6 - Fuel feed line from fuel tank

7 - Screws for high pressure pump

- ☐ Replace after disassembly
- ☐ M6 thread for 1.8 l engines: 8 Nm 90°
- ☐ M8 thread for 2.0 l engines: 20 Nm

8 - High pressure pump

- ☐ with fuel pressure regulating valve - N276-
- ☐ Removing and installing ⇒ [“4.2 Removing and installing the high pressure pump”, page 311](#)
- ☐ Make sure no dirt can get into the fuel system.
- ☐ The fuel system must be de-pressurised before installing the high pressure pump
- ☐ Do not install high-pressure fuel line under tension

9 - Control valve for fuel pressure - N276-

- ☐ is a component part of position -8-

4.2 Removing and installing the high pressure pump

Removing

CAUTION

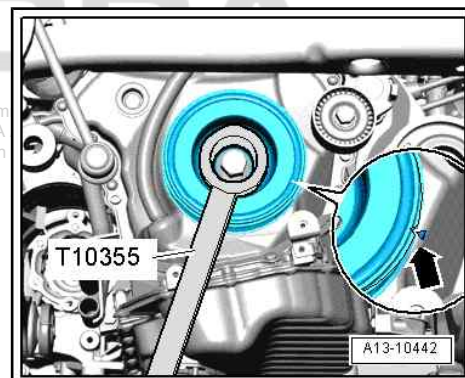
The fuel system is under pressure! Before opening the injection system high-pressure system, the fuel pressure must be reduced to residual pressure
⇒ [“2.3 Reducing pressure in the high pressure system”, page 4](#) .



Note

- ◆ *Installing and removing the high pressure pump only when the engine is cold.*
- ◆ *when installing the high pressure pump, ensure that no dirt gets into the fuel system.*
- ◆ *Collect the fuel which flows out with a cleaning cloth.*
- ◆ *O-ring and connection fitting must always be replaced.*
- ◆ *Always screw in high-pressure fuel lines tension-free.*
- Remove engine cover
⇒ [“1.5 Removing and installing engine trim panel”, page 21](#) .
- Position crankshaft on TDC for cylinder 1.

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Octavia II 2004 ➤ , Octavia II 2010 ➤ , Superb II 2008 ➤ , Superb II 20 ...

1.8/112; 118 kW; 2.0/147 kW TSI engine - Edition 06.2019

- Disconnect the plug from the fuel pressure regulating valve - N276- -1-.

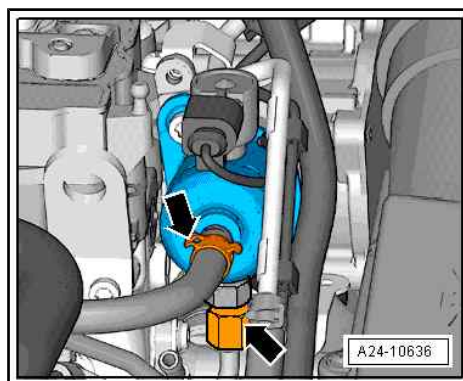
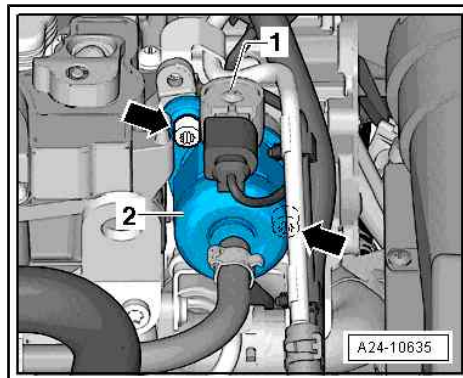
CAUTION

The fuel lines are pressurised.

Risk of injury from ejected fuel.

- ◆ Wear safety goggles.
- ◆ Wear protective gloves.
- ◆ Before opening the high pressure system lay a clean cleaning cloth around the connection point.

- Open both fuel lines -arrows-.



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- Unscrew both screws -arrows-.
- Carefully remove the high pressure pump. The roller tappet can remain inserted in the vacuum pump

Installing

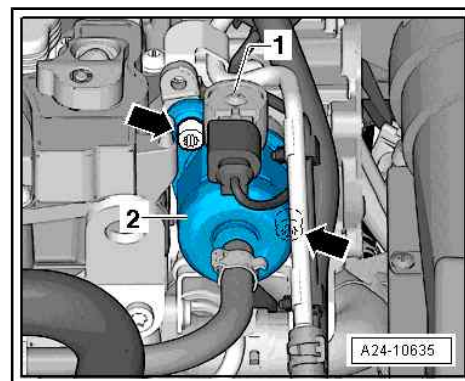


Note

When installing the high-pressure pump, the roller tappet must be at the lowest point.

- Replace O-ring for high-pressure pump.
- Inspect the roller tappets for damage, if necessary replace.
- Insert roller tappets into the vacuum pump.
- Insert and tighten the high pressure pump in the vacuum pump.
- Replace the connection fitting for the high-pressure fuel line and screw tightly.
- Fasten high-pressure fuel line tension-free.

Further installation occurs in reverse order.



Note

Check the fuel system for leaks.

Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Screws for high pressure pump
⇒ [“4.1 Summary of components - high pressure pump”, page 310](#) .

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5 Injection valves

⇒ ["5.1 Removing and installing injectors", page 314](#)

⇒ ["5.2 Replace combustion chamber sealing ring \(Teflon seal\)", page 316](#)

5.1 Removing and installing injectors

Special tools and workshop equipment required

- ◆ Set of tools - T10133-
- ◆ Extractor - T10133/16-



Note

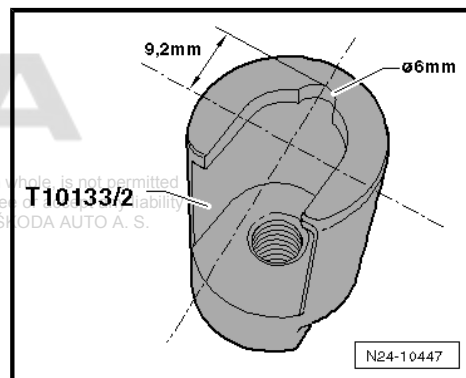
The puller - T10133/2- tool has been modified and is now called extractor - T10133/2A-. If you do not have the new tool, you can carry out this modification yourself.

Adapt puller - T10133/2- for the puller - T10133/2A-

Special tools and workshop equipment required

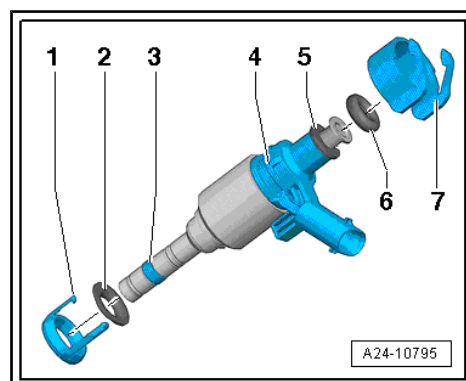
- ◆ Round file, approx. 6 mm.
- File out the semi-circle, as shown in the figure. The semi-circle allows the tool to be slid further onto the injection valve which gives the tool a greater contact surface.
- Mark an "A" at the end of the tool number.

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Injection valve - individual parts

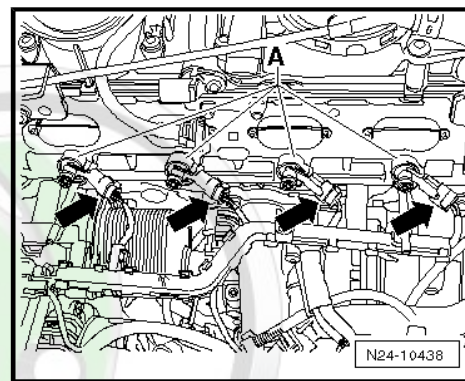
- 1 - Intermediate ring - replace
- 2 - Support
- 3 - Teflon seal for combustion chamber. When installing, the combustion chamber sealing ring must not be greased or treated with any other lubricant.
- 4 - Injector
- 5 - Supporting ring - replace
- 6 - O-ring - replace. Before fitting moisten lightly with clean engine oil
- 7 - Supporting element (the fuel distributor exerts a force via this supporting element, which holds the injector in the cylinder head)



Removing

- Remove intake manifold with fuel distributor
⇒ ["2.3 Removing and installing intake manifold", page 292](#) .
- Seal intake passages with a clean cloth.

- Remove the supporting elements -A- and disconnect the plugs -arrows- from the injection valves.



- Fit puller - T10133/2A- into the groove on the injection valve.
- Next, install the removal tool - T10133/16- and turn the screw -1- to remove the injection valve.



Note

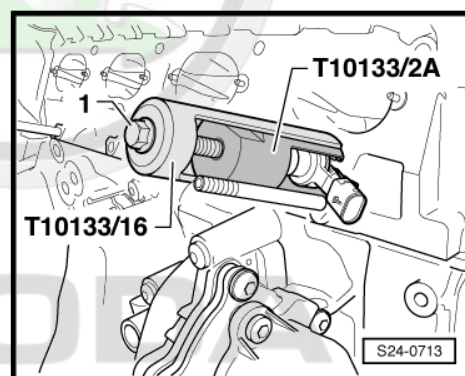
Make attention to the intermediate ring.

Installing



NOTICE

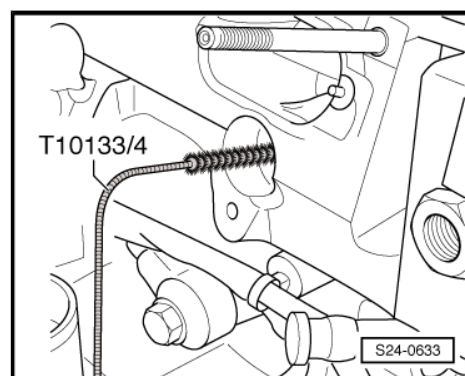
When installing, the combustion chamber sealing ring (Teflon seal) must not be greased or treated with any other lubricant.



Note

An opened induction valve may impede cleaning. In this case, turn the engine further from the c-spanner by hand using a spanner.

- Thoroughly clean the holes of the high-pressure injection valves in the cylinder head with the nylon brush - T10133/4- .





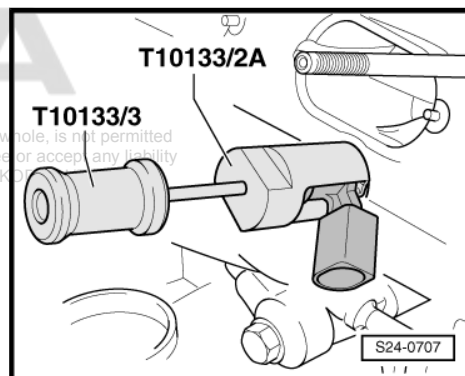
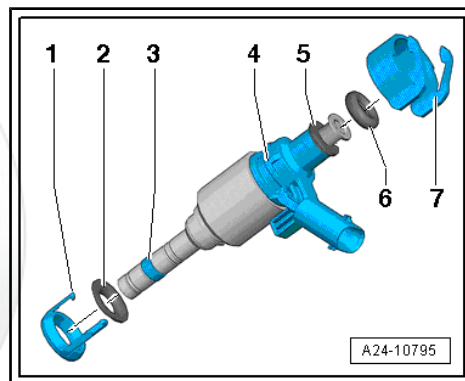
- Replace the combustion chamber seal (Teflon seal) -3- of the injection valve
⇒ [“5.2 Replace combustion chamber sealing ring \(Teflon seal\)”, page 316](#) .
- Replace the supporting ring -5- and the O-ring -6- (lightly wet with engine oil).
- Pull support ring -1- and distance ring -2- onto the injection valve.



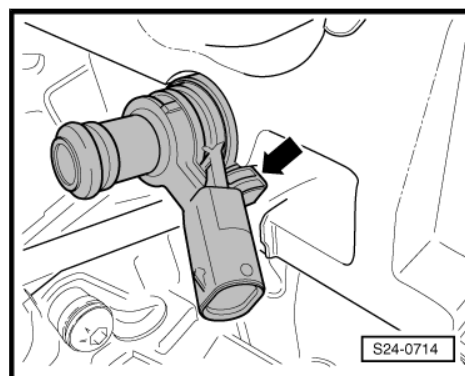
Note

- ◆ *The intermediate ring -1- and mount -2- do not belong to the scope of supply of the new injection valve*
- ◆ *When replacing the injection valve, the intermediate ring -1- and mount -2- must be ordered later from the injection valve repair kit ⇒ ETKA - Electronic Catalogue of Original Parts .*
- Use the position hammer - T10133/3- with the puller - T10133/2A- in order to press in the injection valve into the bore hole in the cylinder head as far it goes.

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- Pay attention to the correct position of the injection valves in the cylinder head -arrow-.
- Fit supporting element.
- Install intake manifold with fuel distributor
⇒ [“2.3 Removing and installing intake manifold”, page 292](#) .



5.2 Replace combustion chamber sealing ring (Teflon seal)

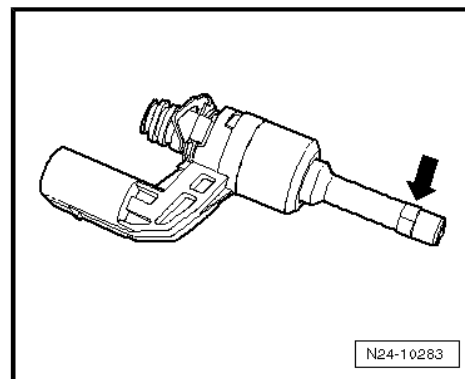


NOTICE

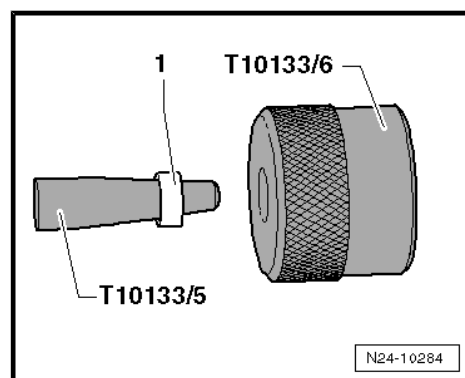
The Teflon seal must not be oiled.

- Carefully clean the injection valve.

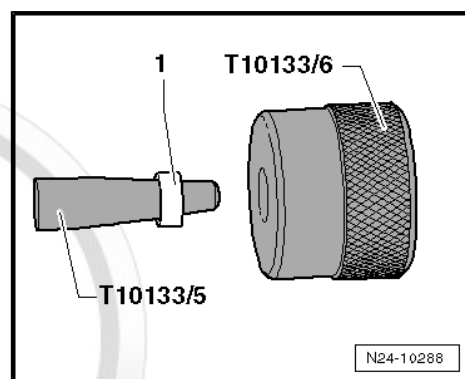
- Carefully cut open the gasket ring with a knife as shown -arrow-. Absolutely try to avoid the contact of the knife blade with the valve body.
- Remove the old gasket ring and clean the gasket ring nut in the area of the gasket ring -arrow-. Remove the existing deposits (carbon deposits) with a wire brush.



- Fit a new gasket ring -1- onto the assembly cone - T10133/5-. Slightly push the gasket ring with the assembly sleeve - T10133/6- (knurling points to the gasket ring -1-) as far as possible onto the assembly cone - T10133/5-.

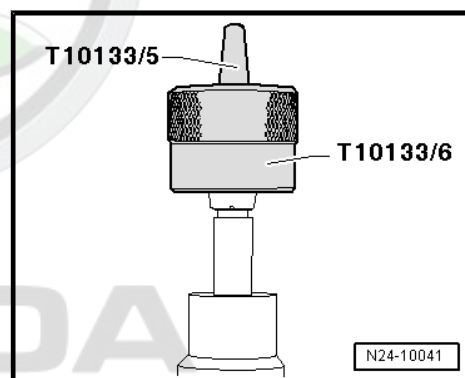


- Turn the assembly sleeve - T10133/6- around (now the knurling points away from the gasket ring), and push the gasket ring -1- up to the end onto the assembly cone - T10133/5-.
- Now position the assembly cone - T10133/5- with the gasket ring from the front onto the injection valve. Push the gasket ring with the assembly sleeve - T10133/6- further onto the injection valve.



The gasket ring is not yet seated in its groove.

- Remove the assembly sleeve - T10133/6- and the assembly cone - T10133/5-.
- Push the sealing ring into the groove by hand.
- Fit the spacer sleeve - T10133/11- onto the valve body.



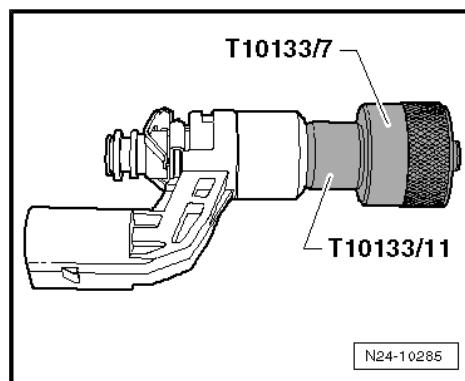
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Octavia II 2004 ➤ , Octavia II 2010 ➤ , Superb II 2008 ➤ , Superb II 20 ...

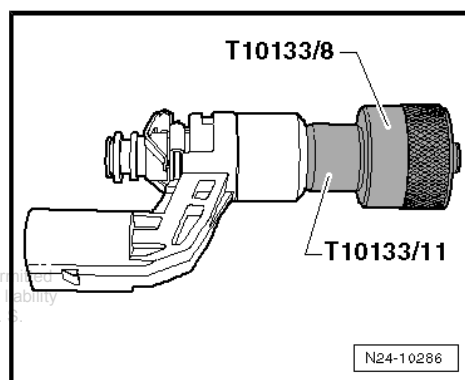
1.8/112; 118 kW; 2.0/147 kW TSI engine - Edition 06.2019

- Press the calibration sleeve - T10133/7- via the gasket ring up to the stop at the spacer sleeve - T10133/11- .
- Remove the calibration sleeve - T10133/7- .



- Press the calibration sleeve - T10133/8- via the gasket ring up to the stop at the spacer sleeve - T10133/11- .
- Remove the calibration sleeve - T10133/8- .

Now the Teflon gasket ring has its correct fitting dimension.



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6 Testing components

⇒ [“6.1 Test intake manifold changeover”, page 319](#)

⇒ [“6.2 Check the double non-return valve”, page 320](#)

6.1 Test intake manifold changeover

Special tools and workshop equipment required

- ◆ Hand vacuum pump , e.g. -VAS 6213-

Observe safety measures when working on the fuel system

⇒ [“2.1 Safety precautions when working on fuel supply system”, page 3](#) .

Observe rules for cleanliness

⇒ [“3.1 Rules of cleanliness”, page 6](#) .

Only carry out the check when there is a torque deficiency. This means there is a lack of elasticity or pulling power.

Test condition

- Valve for intake manifold flap - N316- was inspected with
⇒ Vehicle diagnostic tester.

Test sequence

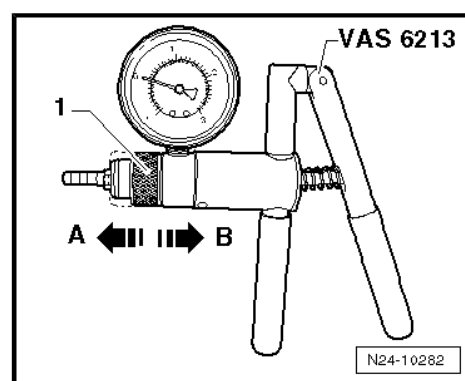
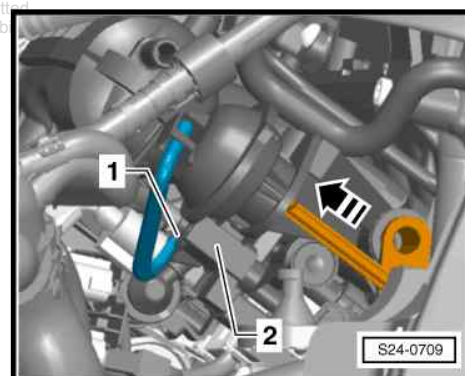
If the valve for intake manifold flap - N316- is OK, carry out the following tests:

- Remove engine cover
⇒ [“1.5 Removing and installing engine trim panel”, page 21](#) .
- Start engine and run in idle.
- Abruptly increase the engine speed with a second mechanic and observe the vacuum actuator for intake manifold switching.

- The positioning element must tighten -arrow-.

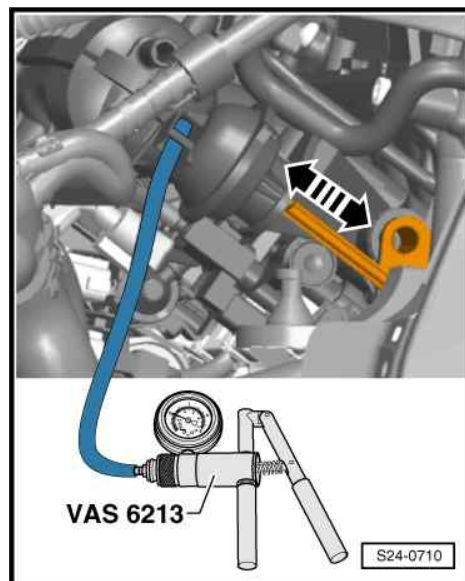
If the change-over does not work as indicated:

- Check the vacuum system for tightness.
- Check the change-over mechanism for ease of movement. To this end activate the linkage by hand.
- Check the vacuum lines for the correct connection.
- Check the vacuum hoses for porosity.
- Detach the vacuum hose -1- to the variable intake manifold changeover positioning element at the intake manifold flap valve - N316- -2-.
- Put the change-over ring -1- of the hand vacuum pump - VAS 6213- in position-A- for “vacuum”
- Connect the hand vacuum pump - VAS 6213- on the positioning element for valves for intake manifold flap.





- Operate the hand vacuum pump - VAS 6213- several times.
The vacuum positioning element must move -arrows-.
- If the vacuum actuator does not move, it must be replaced.



6.2 Check the double non-return valve

Special tools and workshop equipment required

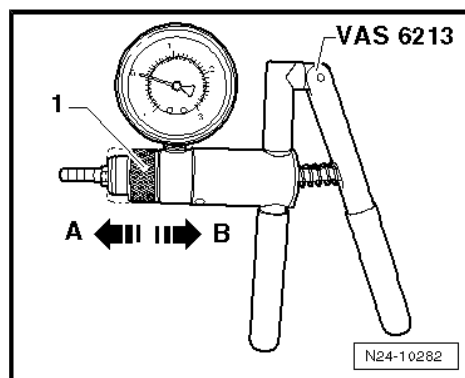
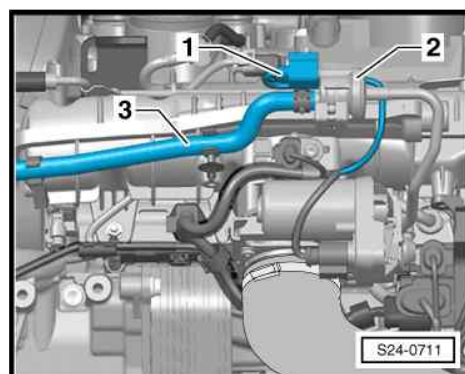
- ◆ Hand vacuum pump , e.g. -VAS 6213-
- ◆ Auxiliary measuring set, , e. g. -V.A.G 1594 C-

Test condition

- The electrical solenoid valve 1 for activated charcoal filter - N80- was checked with the ⇒ Vehicle diagnostic tester and is OK.

Test sequence

- Remove engine cover
⇒ [“1.5 Removing and installing engine trim panel”, page 21](#) .
- Remove the connector -1- and the bleeder hose -3- from the electrical solenoid valve 1 for activated charcoal filter - N80- -2-.
- Put the change-over ring -1- of the hand vacuum pump - VAS 6213- in position-A- for “vacuum”

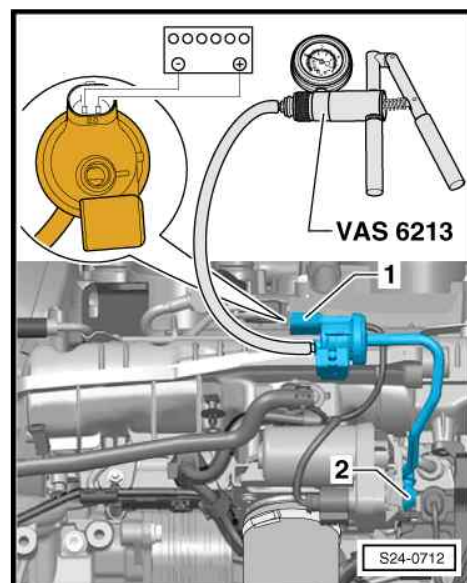


- Connect the hand vacuum pump - VAS 6213- on electrical solenoid valve 1 for activated charcoal filter - N80- .
- Using the auxiliary cables, connect the contacts of the electrical solenoid valve 1 for activated charcoal filter - N80- -1- with the battery. As a result, the electrical solenoid valve 1 for activated charcoal filter - N80- is opened.
- Operate the hand vacuum pump - VAS 6213- several times.
 - Vacuum must build up.
- Disconnect the battery again.

If vacuum does not build up:

- Replace double non-return valve -2-.

The double non-return valve, the electrical solenoid valve 1 for activated charcoal filter - N80- and the plastic hoses are a single component and must be completed in full.



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7 Engine control unit

⇒ ["7.1 Removing and installing engine control unit Octavia II", page 322](#)

⇒ ["7.2 Removing and installing engine control unit Superb II, Yeti", page 324](#)

7.1 Removing and installing engine control unit Octavia II

Special tools and workshop equipment required

- ◆ Body saw e.g. -V.A.G 1523 A-

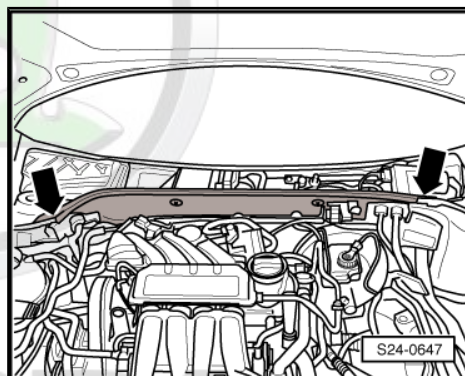


Note

- ◆ *In order to unplug the plugs from the control unit, the control unit must always be removed.*
- ◆ *If the engine control unit must be replaced, connect the ⇒ Vehicle diagnostic tester and in "perform the replace engine control unit" targeted fault finding.*

Removing

- Switch off ignition and pull out ignition key.
- Remove plenum chamber cover, then plenum chamber bulkhead -arrows- ⇒ Body Work; Rep. gr. 66 .



For vehicles with protective housing

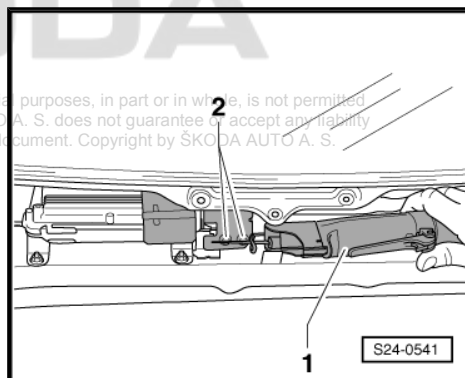
- Cut with body saw -1- a slot for the cross-head screwdriver in the heads of the pull-off screws -2-.



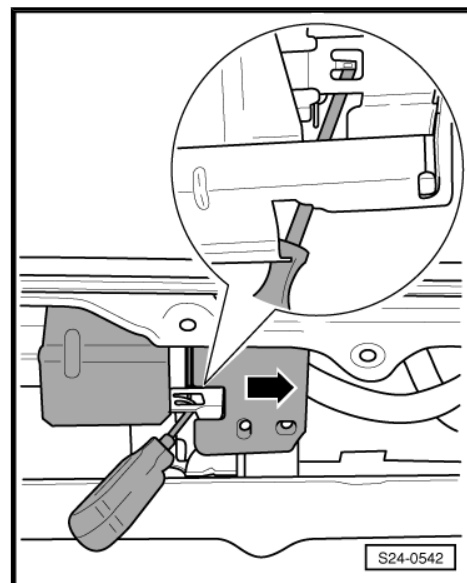
Note

- ◆ *It must be sawed twice with the body saw, so that the slot is wide enough, in order to be able to unscrew the screws with a suitable screwdriver.*
- ◆ *The pull-off screws until are inserted with locking agent.*

- Remove screws -2-.



- Lift locking tab of protective cover with a cross-head screw-driver.
- Push the protective cover in the -direction of the arrow- out of the bracket for engine control unit.



Continued for all vehicles

- Disconnect front plug -1- and remove from engine control unit.
- Lever off retaining bracket -2- slightly.
- Push engine control unit out of the bracket -arrow-.
- Disconnect rear plug and remove from engine control unit.

Installing



Note

For vehicles with protective cover, the metal swarfs must be suctioned out of the plenum chamber before installing the engine control unit.

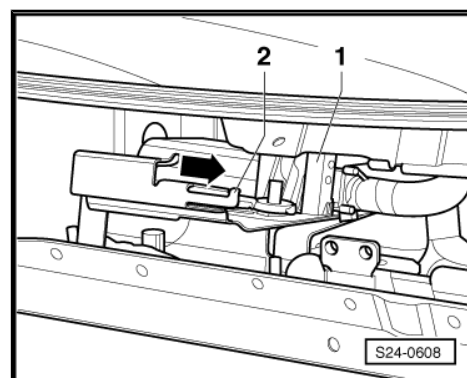
- Connect rear plug to engine control unit and lock.
- Push engine control unit into the bracket and lock the retaining bracket -2-.
- Connect front plug to engine control unit and lock.

For vehicles with protective housing

- Fasten protective cover with new pull-off screws (before tightening align the protective cover in such a way that it does not come into contact with the surrounding components)

Continued for all vehicles

- Install bulkhead plenum chamber and plenum chamber cover
⇒ Body Work; Rep. gr. 66 .



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7.2 Removing and installing engine control unit Superb II, Yeti



Note

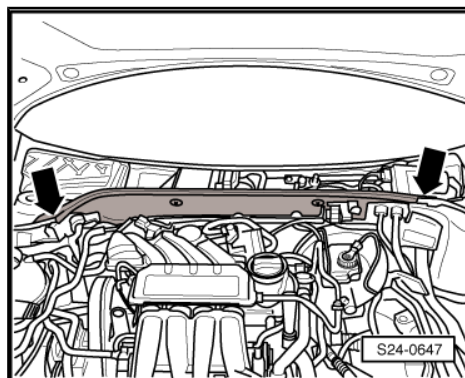
- ◆ In order to unplug the plugs from the control unit, the control unit must always be removed.
- ◆ If the engine control unit must be replaced, connect the ⇒ Vehicle diagnostic tester and in "perform the replace engine control unit" targeted fault finding.

Special tools and workshop equipment required

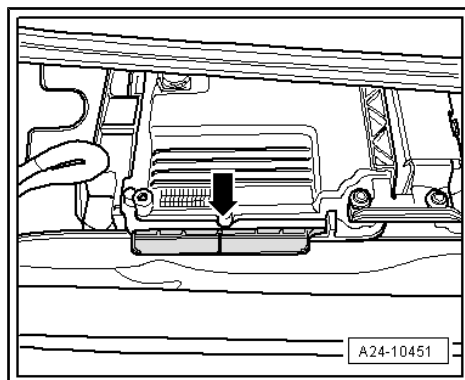
- ◆ Body saw e.g. -V.A.G 1523 A-

Removing

- Switch off ignition and pull out ignition key.
- Remove plenum chamber cover, then plenum chamber bulkhead -arrows- ⇒ Body Work; Rep. gr. 66 .



- Open retaining clip -arrow- and remove the engine control unit - J623- .



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Vehicles with protective cover

- Cut with body saw a slot for the cross-head screwdriver in the heads of the pull-off screws -3- and -4-.



Note

- ◆ *It must be sawed twice with the body saw, so that the slot is wide enough, in order to unscrew the screws with a suitable screwdriver.*
- ◆ *The pull-off screws until are inserted with locking agent.*

- Unscrew the screws and remove the protective covers -2- and -5- for the plug connections.

Continued for all vehicles

- Unlock both plug connectors at engine control unit and remove them.

Installing



Note

For vehicles with protective cover, the metal swarfs must be suctioned out of the plenum chamber before installing the engine control unit.

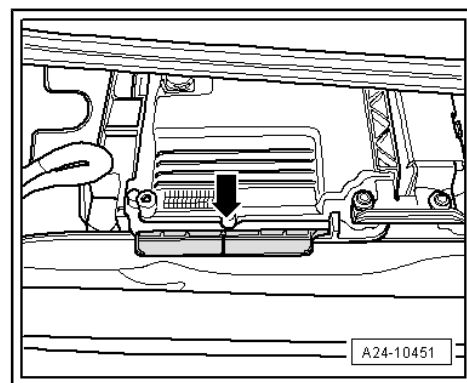
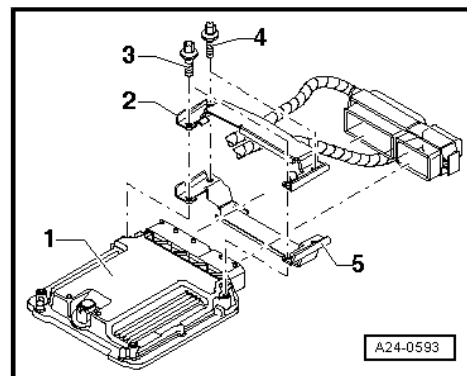
- Connect both plugs and lock.

Vehicles with protective cover

- Fasten protective covers with new pull-off screws.
- Tighten pull-off screws evenly until the heads are pulled off.

Continued for all vehicles

- Push engine control unit into the bracket and lock with retaining clip -arrow-.
- Install bulkhead plenum chamber and plenum chamber cover
⇒ Body Work; Rep. gr. 66 .



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26 – Exhaust system

1 Removing and installing parts of the exhaust system

⇒ [“1.1 Summary of components - exhaust system Octavia II, Superb II with engine identification characters BZB”, page 326](#)

⇒ [“1.2 Summary of components - exhaust system Octavia II, Superb II with engine identification characters CDAA, CDAB”, page 328](#)

⇒ [“1.3 Summary of components - exhaust system Octavia II, Superb II with engine identification characters CCZA”, page 332](#)

⇒ [“1.4 Summary of components - exhaust system Yeti”, page 334](#)

⇒ [“1.5 Removing and installing pre-exhaust pipe”, page 335](#)

⇒ [“1.6 Replacing middle or rear part of the exhaust system”, page 338](#)

⇒ [“1.7 Align exhaust system free of stress”, page 339](#)

⇒ [“1.8 Inspecting the exhaust system for leaks”, page 340](#)

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1.1 Summary of components - exhaust system Octavia II, Superb II with engine identification characters BZB



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

1 - Seal

- ☐ replace

2 - Nut

- ☐ Replace after disassembly
- ☐ Coat stud bolts of exhaust manifold with hot bolt paste - G 052 112 A3- before installing.
- ☐ 40 Nm

3 - Lambda probe - G39-

- ☐ the thread of new lambda probes must be coated with assembly paste
- ☐ if a re-used lambda probe is installed, only coat the thread with hot bolt paste - G 052 112 A3- ; the hot bolt paste - G 052 112 A3- must not get into the slots of the probe body
- ☐ 55 Nm

4 - Pre-exhaust pipe with catalytic converter

- ☐ protect against shocks and blows
- ☐ do not twist decoupling element more than 10° - risk of damage
- ☐ Secure decoupling element with transport security - T10403-
- ☐ Removing and installing ➔ ["1.5 Removing and installing pre-exhaust pipe", page 335](#)

- ☐ Installing the exhaust system without tension ➔ ["1.7 Align exhaust system free of stress", page 339](#)

5 - Clamping sleeve

- ☐ align exhaust system free of stress before fitting on ➔ ["1.7 Align exhaust system free of stress", page 339](#)
- ☐ Fitting position ➔ ["1.7 Align exhaust system free of stress", page 339](#)
- ☐ Tighten screwed connections uniformly

6 - Screw

- ☐ 23 Nm

7 - Nut

- ☐ 20 Nm

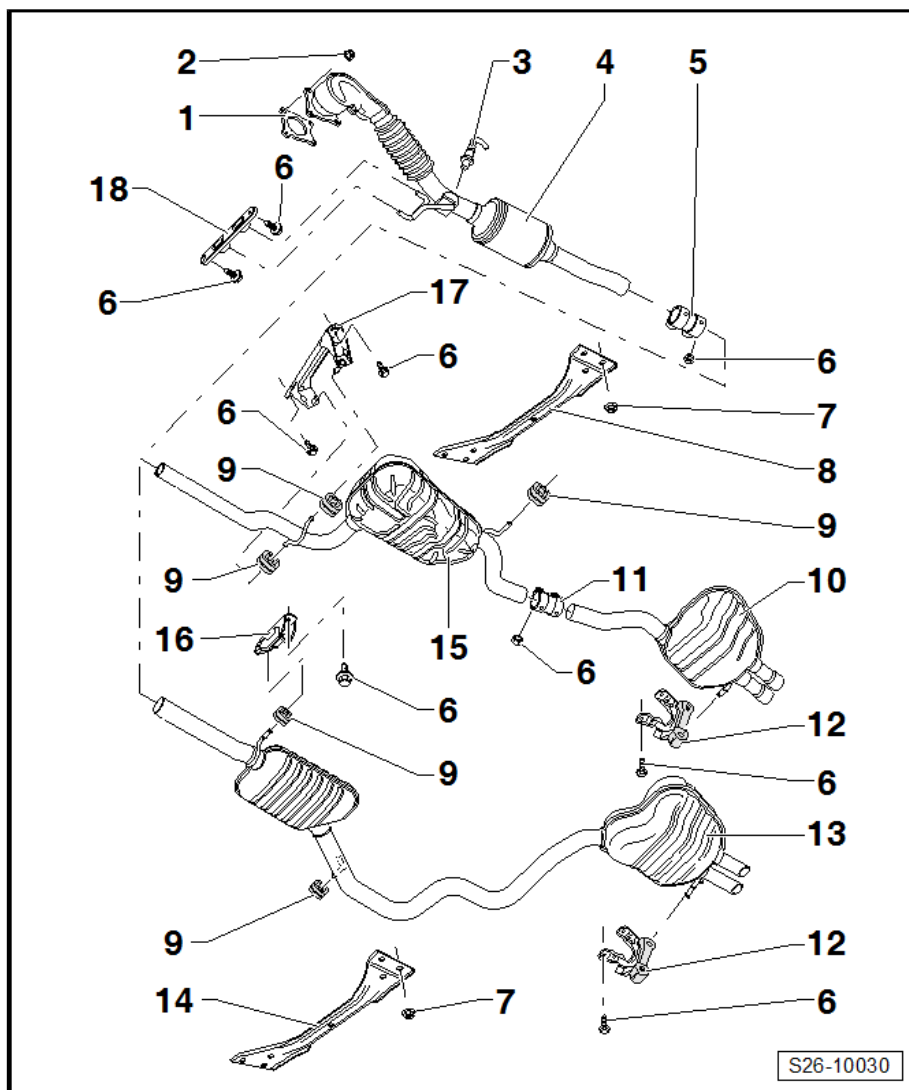
8 - Front tunnel bridge

9 - Retaining strap

- ☐ replace if damaged

10 - Rear part of the exhaust system (Octavia II)

- ☐ for first equipment building unit with middle part of exhaust gas system, replace individually when carrying out repairs
- ☐ Replace ➔ ["1.6 Replacing middle or rear part of the exhaust system", page 338](#)
- ☐ Installing the exhaust system without tension ➔ ["1.7 Align exhaust system free of stress", page 339](#)





11 - Clamping sleeve

- ☐ align exhaust system free of stress before fitting on
⇒ ["1.7 Align exhaust system free of stress", page 339](#)
- ☐ Fitting position ⇒ ["1.7 Align exhaust system free of stress", page 339](#)
- ☐ Tighten screwed connections uniformly

12 - Retaining strap

- ☐ replace if damaged

13 - Rear part of the exhaust system (Superb II)

- ☐ Can only be replaced completely for repair.
- ☐ Installing the exhaust system without tension ⇒ ["1.7 Align exhaust system free of stress", page 339](#)

14 - Rear tunnel bridge

15 - Middle part of the exhaust system (Octavia II)

- ☐ for first equipment building unit with rear part of exhaust gas system, replace individually when carrying out repairs
- ☐ Replace ⇒ ["1.6 Replacing middle or rear part of the exhaust system", page 338](#)
- ☐ Installing the exhaust system without tension ⇒ ["1.7 Align exhaust system free of stress", page 339](#)

16 - Bracket for the exhaust system

- ☐ firmly riveted with the protection plate of the fuel tank

17 - Hanger

- ☐ replace if damaged

18 - Hanger

- ☐ replace if damaged

1.2 Summary of components - exhaust system Octavia II, Superb II with engine identification characters CDAA, CDAB

⇒ ["1.2.1 Overview of components - Octavia II, Superb II exhaust system with engine code CDAA, CDAB, with front-wheel drive", page 328](#)

⇒ ["1.2.2 Summary of components - Octavia II, Superb II with engine code CDAA, CDAB, with all-wheel drive", page 330](#)

1.2.1 Overview of components - Octavia II, Superb II exhaust system with engine code CDAA, CDAB, with front-wheel drive



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

1 - Seal

- ☐ replace

2 - Nut

- ☐ Replace after disassembly
- ☐ Coat stud bolts of exhaust manifold with hot bolt paste - G 052 112 A3- before installing.
- ☐ 40 Nm

3 - lambda probe upstream of catalytic converter - G39-

- ☐ the thread of new lambda probes must be coated with assembly paste
- ☐ if a re-used lambda probe is installed, only coat the thread with hot bolt paste - G 052 112 A3- ; the hot bolt paste - G 052 112 A3- must not get into the slots of the probe body
- ☐ 55 Nm

4 - Pre-exhaust pipe with catalytic converter

- ☐ Pay attention to the part number
- ☐ protect against shocks and blows
- ☐ do not twist decoupling element more than 10° - risk of damage
- ☐ Secure decoupling element with transport security - T10403-

- ☐ Removing and installing ⇒ ["1.5 Removing and installing pre-exhaust pipe", page 335](#)

- ☐ Installing the exhaust system without tension ⇒ ["1.7 Align exhaust system free of stress", page 339](#)

5 - Lambda probe downstream of catalytic converter - G130-

- ☐ the thread of new lambda probes must be coated with assembly paste
- ☐ if a re-used lambda probe is installed, only coat the thread with hot bolt paste - G 052 112 A3- ; the hot bolt paste - G 052 112 A3- must not get into the slots of the probe body
- ☐ 55 Nm

6 - Clamping sleeve

- ☐ align exhaust system free of stress before fitting on
⇒ ["1.7 Align exhaust system free of stress", page 339](#)
- ☐ Tighten screwed connections uniformly

7 - Screw

- ☐ 23 Nm

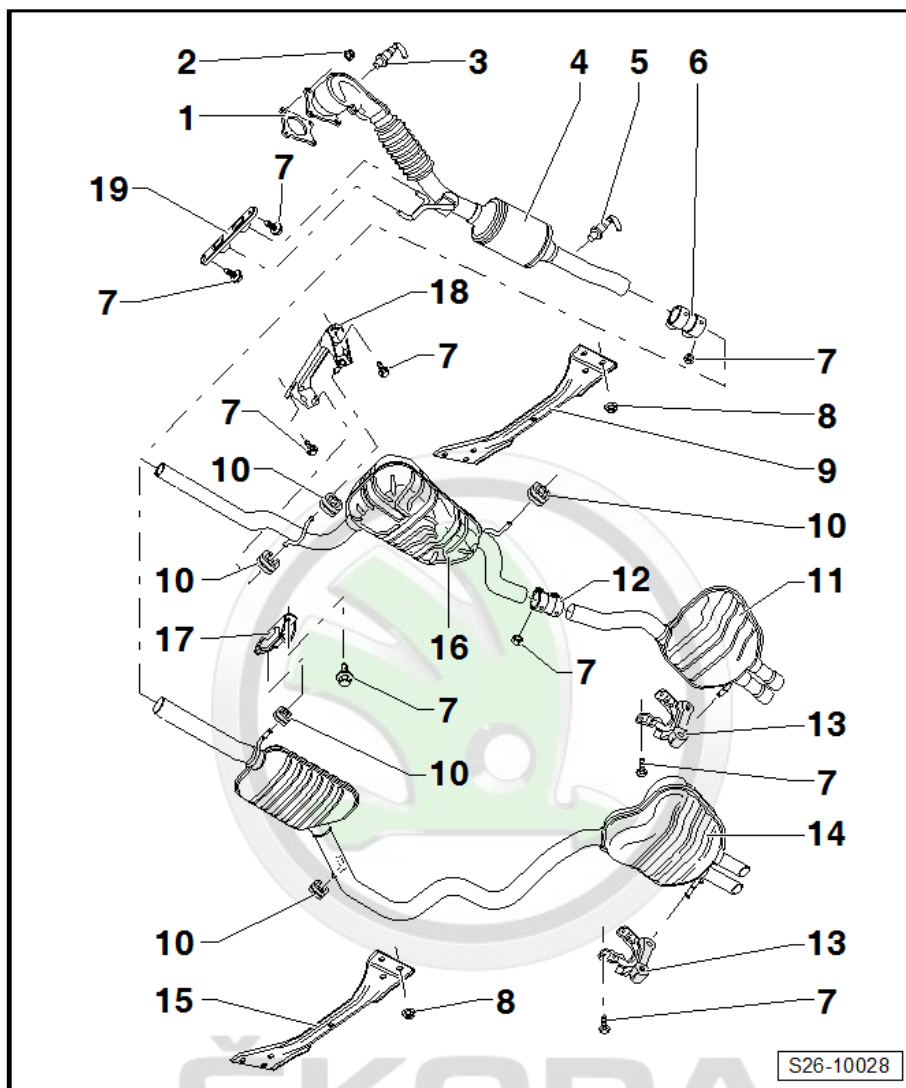
8 - Nut

- ☐ 20 Nm

9 - Front tunnel bridge

10 - Retaining strap

- ☐ replace if damaged





11 - Rear part of the exhaust system (Octavia II)

- ☐ for first equipment building unit with middle silencer; replace individually when carrying out repairs
- ☐ Installing the exhaust system without tension ⇒ [“1.7 Align exhaust system free of stress”, page 339](#)
- ☐ Disconnect exhaust system ⇒ [“1.6 Replacing middle or rear part of the exhaust system”, page 338](#)

12 - Clamping sleeve

- ☐ align exhaust system free of stress before fitting on
⇒ [“1.7 Align exhaust system free of stress”, page 339](#)
- ☐ Fitting position ⇒ [“1.7 Align exhaust system free of stress”, page 339](#)
- ☐ Tighten screwed connections uniformly

13 - Retaining strap

- ☐ replace if damaged

14 - Rear part of the exhaust system (Superb II)

- ☐ Can only be replaced completely for repair.
- ☐ Installing the exhaust system without tension ⇒ [“1.7 Align exhaust system free of stress”, page 339](#)

15 - Rear tunnel bridge

16 - Middle part of the exhaust system (Octavia II)

- ☐ for first equipment building unit with rear silencer; replace individually when carrying out repairs
- ☐ Installing the exhaust system without tension ⇒ [“1.7 Align exhaust system free of stress”, page 339](#)
- ☐ Disconnect exhaust system ⇒ [“1.6 Replacing middle or rear part of the exhaust system”, page 338](#)

17 - Bracket for the exhaust system

- ☐ firmly riveted with the protection plate of the fuel tank

18 - Hanger

- ☐ replace if damaged

19 - Hanger

- ☐ replace if damaged

1.2.2 Summary of components - Octavia II, Superb II with engine code CDAA, CDAB, with all-wheel drive



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

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1 - Seal

- ☐ replace

2 - Nut

- ☐ Replace after disassembly
- ☐ Coat stud bolts of exhaust manifold with hot bolt paste - G 052 112 A3- before installing.
- ☐ 40 Nm

3 - lambda probe upstream of catalytic converter - G39-

- ☐ the thread of new lambda probes must be coated with assembly paste
- ☐ if a re-used lambda probe is installed, only coat the thread with hot bolt paste - G 052 112 A3- ; the hot bolt paste - G 052 112 A3- must not get into the slots of the probe body
- ☐ 55 Nm

4 - Hanger

- ☐ replace if damaged

5 - Screw

- ☐ 23 Nm

6 - Pre-exhaust pipe with catalytic converter

- ☐ Octavia II up to 08.2011
- ☐ Superb II from 09.2010
- ☐ protect against shocks and blows
- ☐ do not twist decoupling element more than 10° - risk of damage
- ☐ Secure decoupling element with transport security - T10403-
- ☐ Removing and installing ⇒ [“1.5 Removing and installing pre-exhaust pipe”, page 335](#)
- ☐ Installing the exhaust system without tension ⇒ [“1.7 Align exhaust system free of stress”, page 339](#)

7 - Lambda probe downstream of catalytic converter - G130-

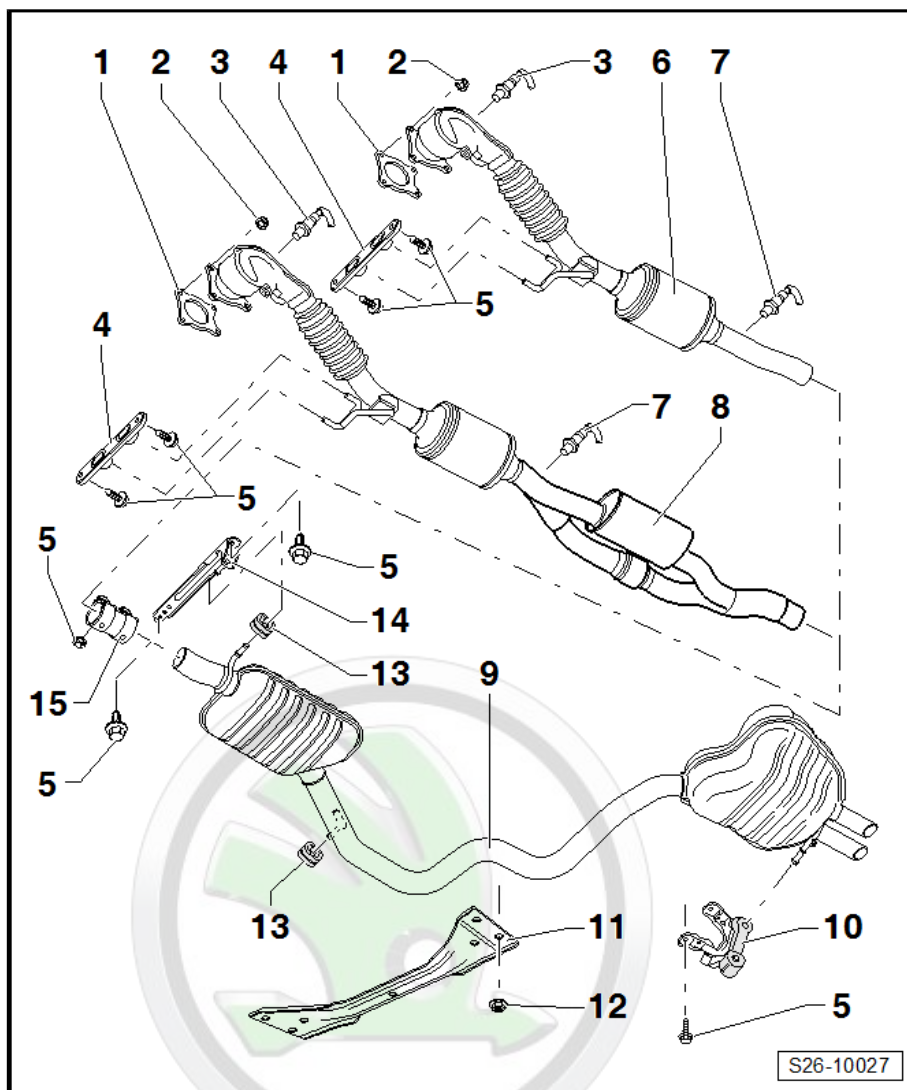
- ☐ the thread of new lambda probes must be coated with assembly paste
- ☐ if a re-used lambda probe is installed, only coat the thread with hot bolt paste - G 052 112 A3- ; the hot bolt paste - G 052 112 A3- must not get into the slots of the probe body
- ☐ 55 Nm

8 - Pre-exhaust pipe with catalytic converter

- ☐ Octavia II up to 08.2011
- ☐ Superb II up to 09.2010
- ☐ protect against shocks and blows
- ☐ do not twist decoupling element more than 10° - risk of damage
- ☐ Secure decoupling element with transport security - T10403-
- ☐ Removing and installing ⇒ [“1.5 Removing and installing pre-exhaust pipe”, page 335](#)
- ☐ Installing the exhaust system without tension ⇒ [“1.7 Align exhaust system free of stress”, page 339](#)

9 - Middle and rear part of the exhaust system

- ☐ Can only be replaced completely for repair.





- ☐ Installing the exhaust system without tension ⇒ [“1.7 Align exhaust system free of stress”, page 339](#)

10 - Hanger

- ☐ replace if damaged

11 - Tunnel bridge

12 - Nut

- ☐ 20 Nm

13 - Retaining strap

- ☐ replace if damaged

14 - Hanger

15 - Clamping sleeve

- ☐ align exhaust system free of stress before fitting on
⇒ [“1.7 Align exhaust system free of stress”, page 339](#)
- ☐ Tighten screwed connections uniformly

1.3 Summary of components - exhaust system Octavia II, Superb II with engine identification characters CCZA



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.



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1 - Seal

- ☐ replace

2 - Screws

- ☐ Replace after disassembly
- ☐ Coat stud bolts of exhaust manifold with hot bolt paste - G 052 112 A3- before installing.
- ☐ 40 Nm

3 - lambda probe upstream of catalytic converter - G39-

- ☐ the thread of new lambda probes must be coated with assembly paste
- ☐ if a re-used lambda probe is installed, only coat the thread with hot bolt paste - G 052 112 A3- ; the hot bolt paste - G 052 112 A3- must not get into the slots of the probe body
- ☐ 55 Nm

4 - Pre-exhaust pipe with catalytic converter

- ☐ protect against shocks and blows
- ☐ do not twist decoupling element more than 10° - risk of damage
- ☐ Secure decoupling element with transport security - T10403-
- ☐ Removing and installing
⇒ ["1.5 Removing and installing pre-exhaust pipe", page 335](#)
- ☐ Installing the exhaust system without tension ⇒ ["1.7 Align exhaust system free of stress", page 339](#)

5 - Lambda probe downstream of catalytic converter - G130-

- ☐ the thread of new lambda probes must be coated with assembly paste
- ☐ if a re-used lambda probe is installed, only coat the thread with hot bolt paste - G 052 112 A3- ; the hot bolt paste - G 052 112 A3- must not get into the slots of the probe body
- ☐ 55 Nm

6 - Clamping sleeve

- ☐ align exhaust system free of stress before fitting on
⇒ ["1.7 Align exhaust system free of stress", page 339](#)
- ☐ Fitting position ⇒ ["1.7 Align exhaust system free of stress", page 339](#)
- ☐ Tighten screwed connections uniformly

7 - Screw

- ☐ 23 Nm

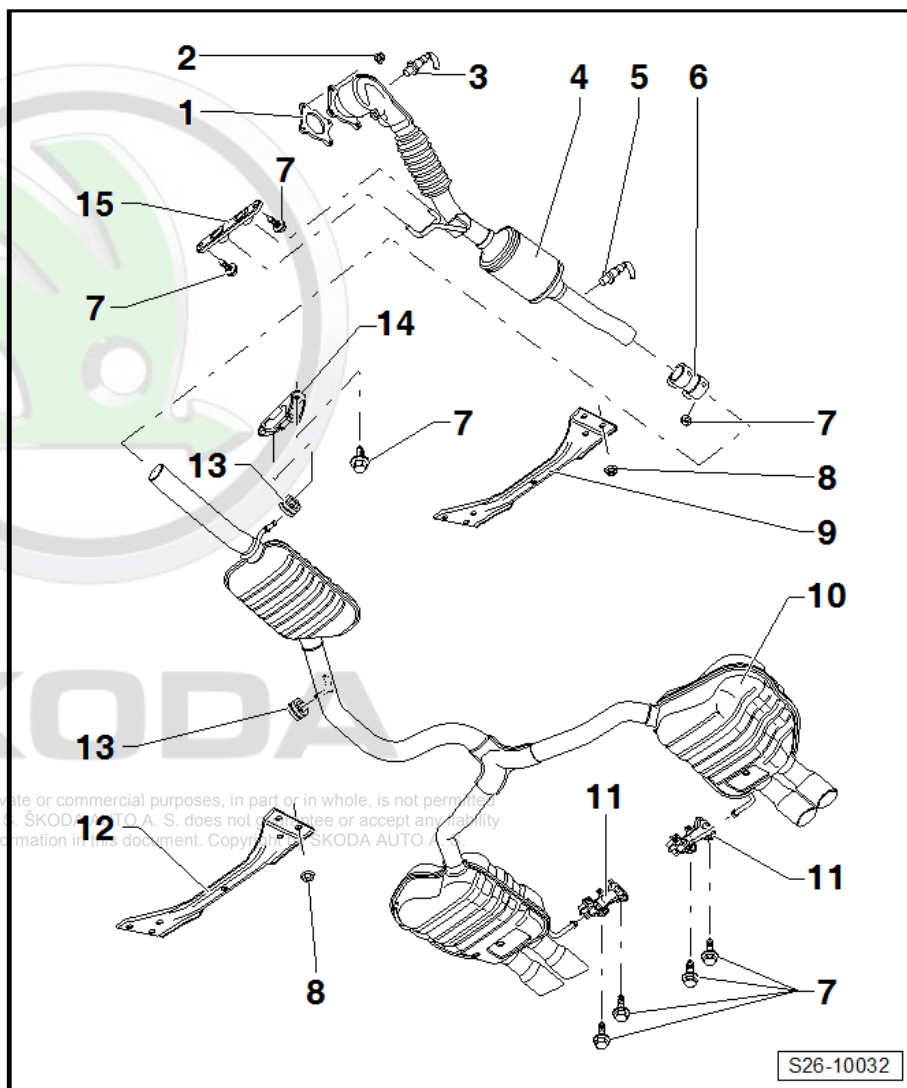
8 - Nut

- ☐ 20 Nm

9 - Front tunnel bridge

10 - Rear part of exhaust system

- ☐ Can only be replaced completely for repair.





- ☐ Installing the exhaust system without tension ➔ [“1.7 Align exhaust system free of stress”, page 339](#)

11 - Retaining strap

- ☐ replace if damaged

12 - Rear tunnel bridge

13 - Retaining strap

- ☐ replace if damaged

14 - Bracket for the exhaust system

- ☐ firmly riveted with the protection plate of the fuel tank

15 - Hanger

- ☐ replace if damaged

1.4 Summary of components - exhaust system Yeti



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

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1 - Seal

- ☐ replace

2 - Nut

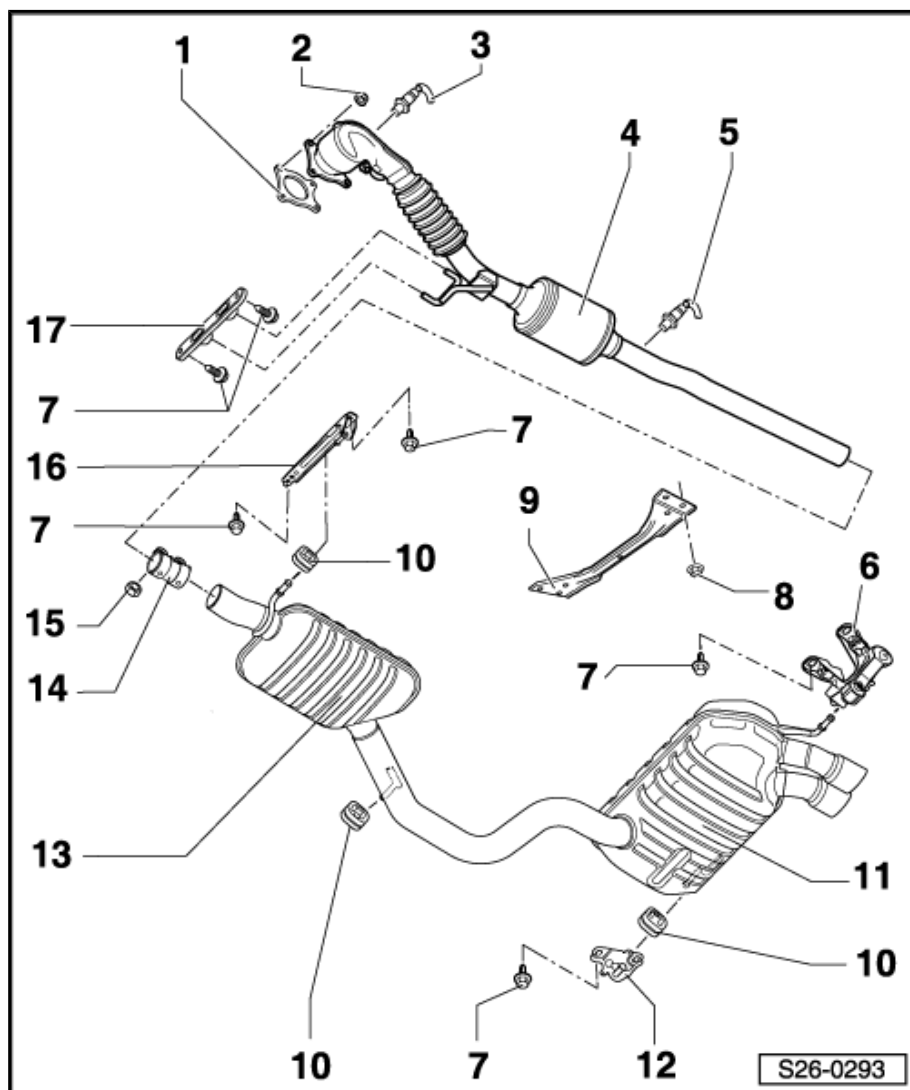
- ☐ Replace after disassembly
- ☐ Coat stud bolts of exhaust manifold with hot bolt paste - G 052 112 A3- before installing.
- ☐ 40 Nm

3 - lambda probe upstream of catalytic converter - G39-

- ☐ the thread of new lambda probes must be coated with assembly paste
- ☐ if a re-used lambda probe is installed, only coat the thread with hot bolt paste - G 052 112 A3- ; the hot bolt paste - G 052 112 A3- must not get into the slots of the probe body
- ☐ 55 Nm

4 - Pre-exhaust pipe with catalytic converter

- ☐ protect against shocks and blows
- ☐ do not twist decoupling element more than 10° - risk of damage
- ☐ Secure decoupling element with transport security - T10403-



- ☐ Removing and installing ⇒ [“1.5 Removing and installing pre-exhaust pipe”, page 335](#)
- ☐ Installing the exhaust system without tension ⇒ [“1.7 Align exhaust system free of stress”, page 339](#)

5 - Lambda probe downstream of catalytic converter - G130-

- ☐ the thread of new lambda probes must be coated with assembly paste
- ☐ if a re-used lambda probe is installed, only coat the thread with hot bolt paste - G 052 112 A3- ; the hot bolt paste - G 052 112 A3- must not get into the slots of the probe body
- ☐ 55 Nm

6 - Hanger

- ☐ replace if damaged

7 - Screw

- ☐ 23 Nm

8 - Nut

- ☐ 20 Nm

9 - Tunnel bridge

10 - Retaining strap

- ☐ replace if damaged

11 - Rear part of exhaust system

- ☐ for first equipment building unit with middle part of exhaust gas system, replace individually when carrying out repairs
- ☐ Replace ⇒ [“1.6 Replacing middle or rear part of the exhaust system”, page 338](#)
- ☐ Installing the exhaust system without tension ⇒ [“1.7 Align exhaust system free of stress”, page 339](#)

12 - Hanger

- ☐ replace if damaged

13 - Middle part of exhaust system

- ☐ for first equipment building unit with middle part of exhaust gas system, replace individually when carrying out repairs
- ☐ Replace ⇒ [“1.6 Replacing middle or rear part of the exhaust system”, page 338](#)
- ☐ Installing the exhaust system without tension ⇒ [“1.7 Align exhaust system free of stress”, page 339](#)

14 - Clamping sleeve

- ☐ align exhaust system free of stress before fitting on
⇒ [“1.7 Align exhaust system free of stress”, page 339](#)
- ☐ Tighten screwed connections uniformly

15 - Nut

- ☐ 23 Nm

16 - Hanger

- ☐ replace if damaged

17 - Hanger

- ☐ replace if damaged

1.5 Removing and installing pre-exhaust pipe

Special tools and workshop equipment required

- ◆ Lambda probe open ring spanner set
- ◆ Hot bolt paste - G 052 112 A3-
- ◆ Transport safety device - T10403-

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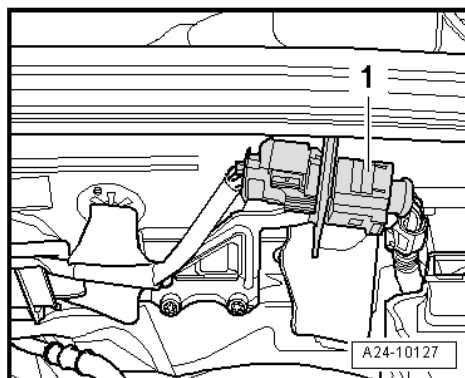


Removing

- Remove air filter housing
⇒ ["3.2 Removing and installing air filter housing", page 308](#) .

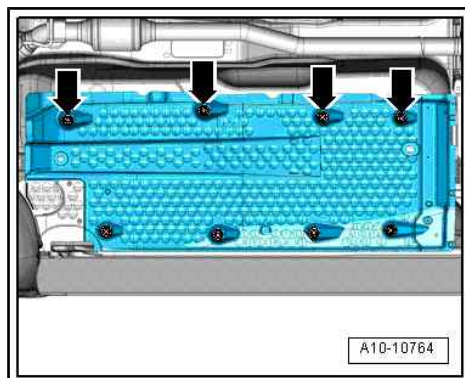
For engines with identification characters CDAA, CDAB, CCZA

- Undo the connector -1- for Lambda probe upstream of catalytic converter - G39- from the mounting bracket on the front face, and disconnect.



Continued for all vehicles

- Unscrew the nuts -arrows- and open up the under floor trim panel downwards on the inner side on the right.

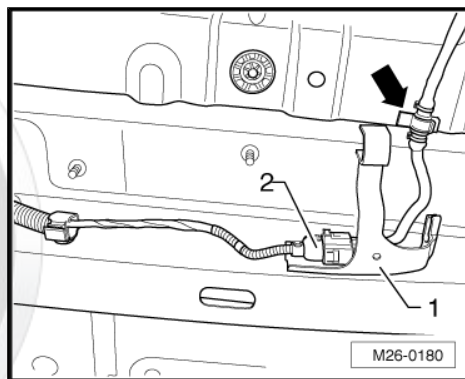


- Unclip the cable -arrow-, remove the mounting bracket -1- and disconnect the plug connection -2- for the lambda probe - G39/ G130- .

Vehicles with four-wheel drive

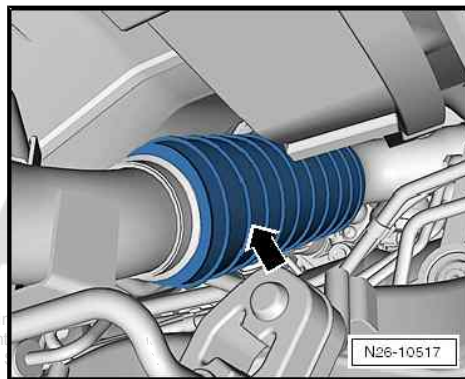
- Remove propshaft ⇒ Gearbox; Rep. gr. 39. .

Continued for all vehicles

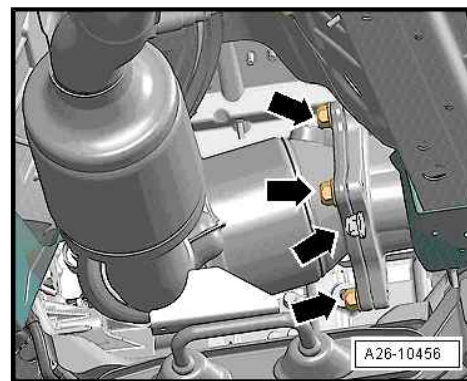


Note

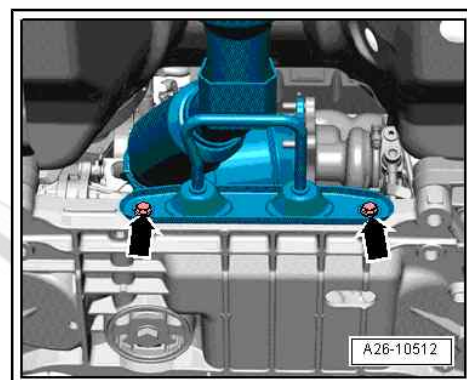
- When re-fitting the exhaust pipe, note the following:
- do not twist decoupling element in the exhaust pipe more than 10° - risk of damage
- Do not damage the wire mesh of the decoupling element.
- Secure the decoupling element with the transport security - T10403- against over-tensioning -arrow-.



- Unscrew the two upper fixing nuts -arrows- pre-exhaust pipe/turbocharger.
- Unscrew the two lower fixing nuts -arrows- pre-exhaust pipe/turbocharger.



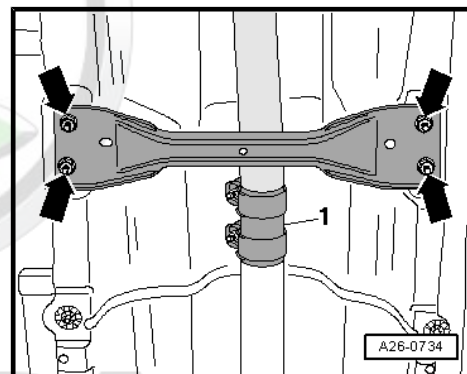
- Unbolt bracket for exhaust system -arrows-.



- Remove front tunnel bridge -arrows-.
- Slacken the clamping sleeve -1- and slide it backwards.
- Remove the front part of the exhaust system.

Installing

The installation occurs in reverse order. However, pay attention to the following:

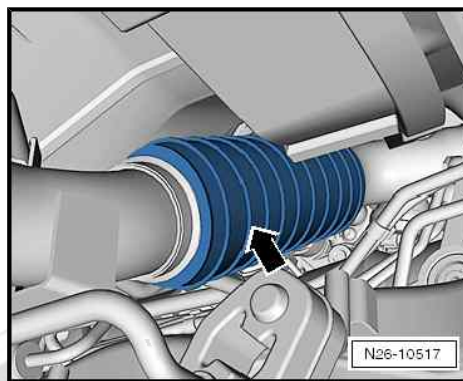


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Note

- ◆ *do not twist decoupling element in the exhaust pipe more than 10° - risk of damage*
- ◆ *Do not damage the wire mesh of the decoupling element.*
- ◆ *Secure the decoupling element with the transport security - T10403- against overtensioning -arrow-.*
- Replace the gasket and the self-locking nuts.
- Coat stud bolts of the turbocharger with hot bolt paste - G 052 112 A3-
- Align exhaust system free of stress
⇒ ["1.7 Align exhaust system free of stress", page 339](#) .



Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Octavia II, Superb II exhaust system with engine identification characters BZB
⇒ ["1.1 Summary of components - exhaust system Octavia II, Superb II with engine identification characters BZB", page 326](#) .
- ◆ Octavia II, Superb II exhaust system with engine identification characters CDAA, CDAB
⇒ ["1.2 Summary of components - exhaust system Octavia II, Superb II with engine identification characters CDAA, CDAB", page 328](#) .
- ◆ Octavia II, Superb II exhaust system with engine identification characters CCZA
⇒ ["1.3 Summary of components - exhaust system Octavia II, Superb II with engine identification characters CCZA", page 332](#) .
- ◆ Yeti exhaust system
⇒ ["1.4 Summary of components - exhaust system Yeti", page 334](#) .

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1.6 Replacing middle or rear part of the exhaust system

Special tools and workshop equipment required

- ◆ Body saw e.g. -V.A.G 1523 A-
- ◆ Protective goggles



Note

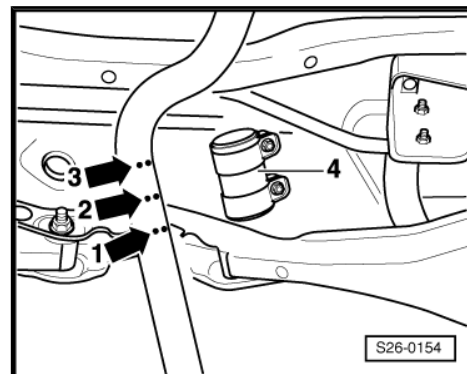
- ◆ *To replace the front or rear silencer individually, a separation point is provided in the connecting pipe.*
- ◆ *The separation point is marked by indentations on the circumference of the exhaust pipe.*

⚠ CAUTION

To avoid injury from metal shavings, wear eye protection and protective clothing.

- Disconnect exhaust pipe at the separation point -arrow 2- with body saw (right-angled).
- When installing, position rear clamping sleeve -4- at the side markings -arrow 1- and -arrow 3-.
- Turn the rear clamping sleeve -4- in such a way that the ends of the screws are as far upwards as possible.
- Align rear part of exhaust system horizontally and tighten rear clamping sleeve -4- uniformly.
- Align exhaust system in cold condition free of stress
⇒ **“1.7 Align exhaust system free of stress”, page 339** .

Component	Tightening torque
Rear clamping sleeve -4-	23 Nm

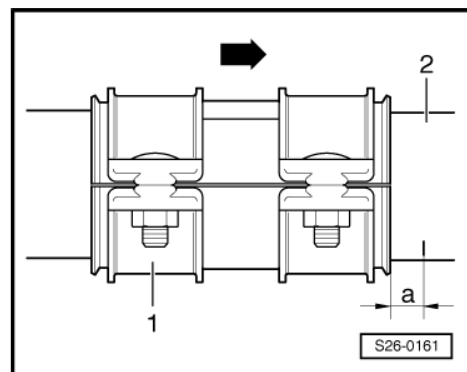


1.7 Align exhaust system free of stress

- The exhaust system is aligned when cold.
- Slacken the nuts at the clamping sleeve -1- and align the intermediate pipe -2- (-arrow- points in direction of travel).
-a- = 5 mm

The fixing screws must be located on the right. The screws must not protrude beyond the bottom edge of the clamping sleeve.

- Tighten front nut by hand.



Vehicles with front-wheel drive

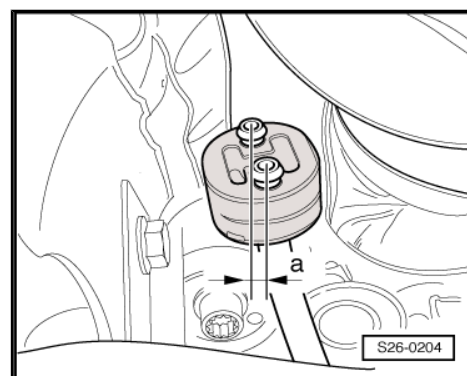
- Push the exhaust system so far forward until the initial load dimension -a- on the retaining strap at the middle silencer is 9...11 mm.

Vehicles with four-wheel drive

- Push the exhaust system so far forward until the initial load dimension -a- on the retaining strap at the middle silencer is 7...9 mm.

Continued for all vehicles

- Tighten the nuts of the front clamping sleeve evenly.



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Align exhaust tailpipes

- Align rear silencer in such a way that there is an equal distance -a- between bumper opening and exhaust tailpipes.

At the same time there must be an equal distance -b- from the bumper opening to the exhaust tailpipes.

For aligning the rear silencer, if necessary the hangers of the exhaust system must be loosened.

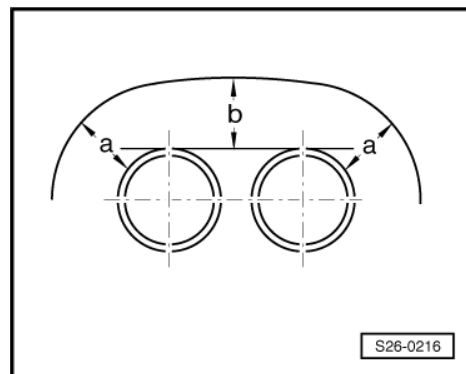
Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ♦ Octavia II, Superb II front clamping sleeve with engine identification characters BZB
⇒ [“1.1 Summary of components - exhaust system Octavia II, Superb II with engine identification characters BZB”, page 326](#) .
- ♦ Octavia II, Superb II front clamping sleeve with engine identification characters CDAA, CDAB
⇒ [“1.2 Summary of components - exhaust system Octavia II, Superb II with engine identification characters CDAA, CDAB”, page 328](#) .
- ♦ Octavia II, Superb II front clamping sleeve with engine code CCZA
⇒ [“1.3 Summary of components - exhaust system Octavia II, Superb II with engine identification characters CCZA”, page 332](#) .
- ♦ Yeti front clamping sleeve
⇒ [“1.4 Summary of components - exhaust system Yeti”, page 334](#) .



1.8 Inspecting the exhaust system for leaks

- Start engine and run in idle.
- Seal off exhaust tailpipes for the duration of the leak check (e.g. with cloth or plug).
- Inspect connection points of cylinder head/exhaust manifold, exhaust gas turbocharger/pre-exhaust pipe etc. for leaktightness by listening and visual inspection.
- Eliminate any leak found.

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28 – Ignition system

1 Ignition system

⇒ [“1.1 Assembly overview - ignition system”, page 341](#)

⇒ [“1.2 Removing and installing ignition coils with output stage”, page 342](#)

⇒ [“1.3 Removing and installing knock sensor 1 G61 ”, page 344](#)

⇒ [“1.4 Removing and installing the engine speed transmitter G28 ”, page 344](#)

1.1 Assembly overview - ignition system



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

1 - Knock sensor 1 - G61-

- ☐ on the front cylinder block, underneath the intake manifold
- ☐ Gold-plated contacts
- ☐ Removing and installing
⇒ [“1.3 Removing and installing knock sensor 1 G61 ”, page 344](#)

2 - Screw

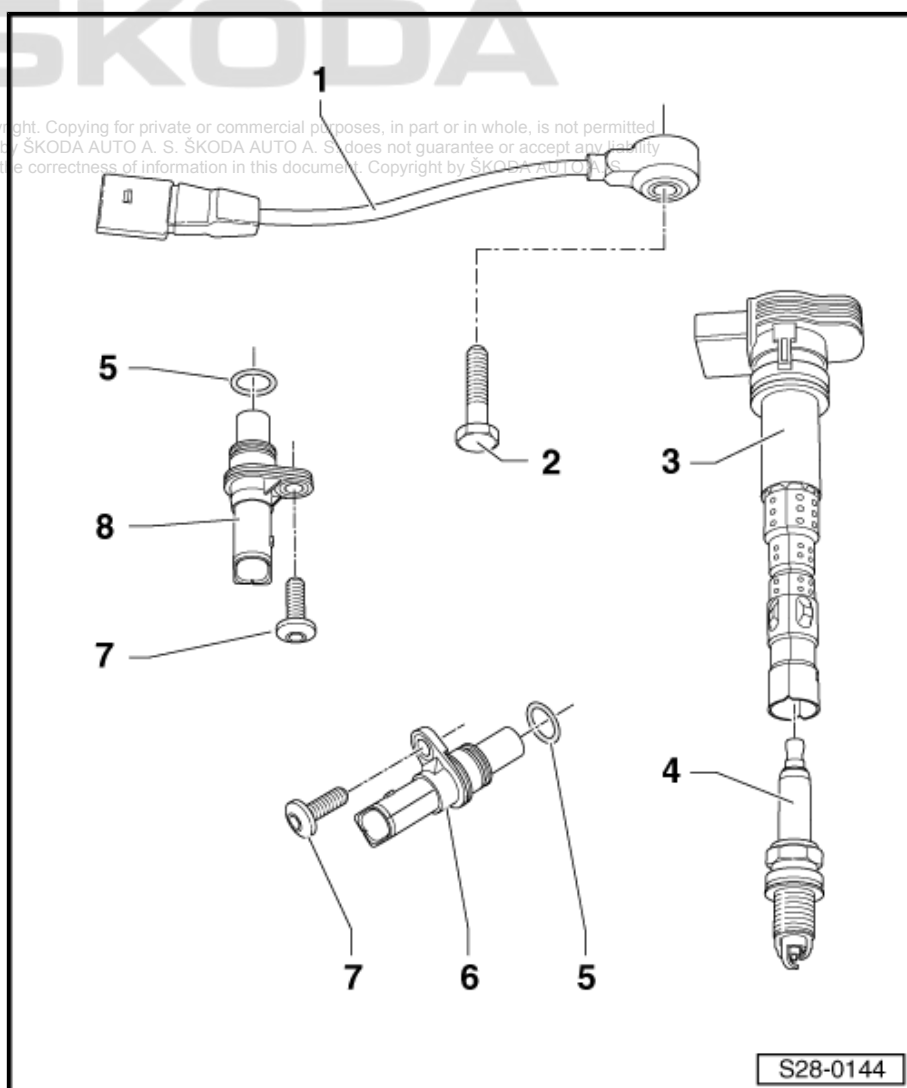
- ☐ The tightening torque influences the knock sensor function
- ☐ 20 Nm

3 - Ignition coil with power output stage

- ◆ Ignition coil 1 with power output stage - N70-
- ◆ Ignition coil 2 with power output stage - N127-
- ◆ Ignition coil 3 with power output stage - N291-
- ◆ Ignition coil 4 with power output stage - N292-
- ☐ Removing and installing
⇒ [“1.2 Removing and installing ignition coils with output stage”, page 342](#)

4 - Spark plug

- ☐ Change interval, type and electrode spacing
⇒ Maintenance ; Booklet Octavia II/Superb II/Yeti





- ☐ use spark plug wrench e.g. -3122 B- for removing and installing
- ☐ 30 Nm

5 - O-ring

- ☐ replace

6 - Engine speed transmitter - G28-

- ☐ in the lower front left cylinder block
- ☐ Removing and installing ⇒ [“1.4 Removing and installing the engine speed transmitter G28”, page 344](#)

7 - Screw

- ☐ Replace after disassembly
- ☐ 8 Nm + 90°.

8 - Hall transmitter - G40-

- ☐ in the front cylinder head cover ⇒ [“1.1 Summary of components - cylinder head”, page 73](#)

1.2 Removing and installing ignition coils with output stage

Special tools and workshop equipment required

- ◆ Extractor - T40039-

Removing

- Remove engine cover
⇒ [“1.5 Removing and installing engine trim panel”, page 21](#) .

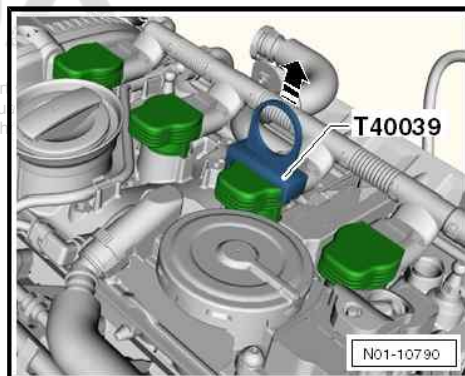
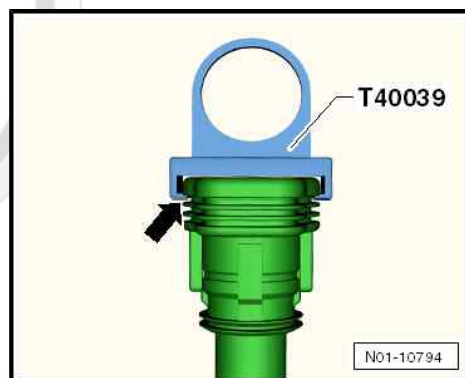


Note

- ◆ *To remove the spark plugs, attach the extractor - T40039- to the uppermost thick rib -arrow- of the ignition coil with power outage stage.*
- ◆ *If the lower ribs are used, they can be damaged.*

- Using the puller - T40039- , remove all ignition coils from the spark plug shaft approx. 30 mm.

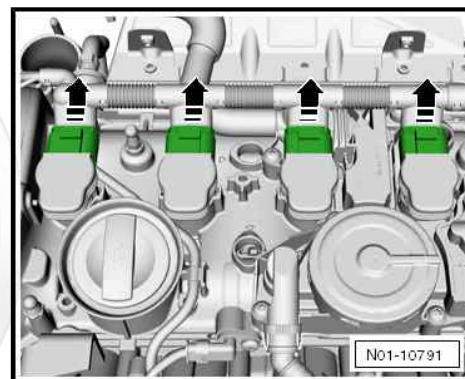
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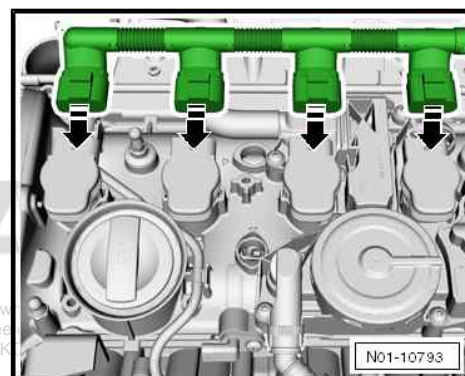
- Unlock the connectors from all ignition coils -arrows-, and then remove the connectors at the same time.

Installing

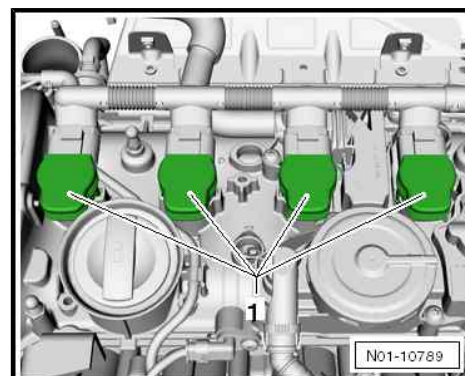
- Insert all ignition coils loosely into the spark plug wrenches.



- Align the ignition coils -arrows- to the connectors.
- Insert all connectors onto the ignition coils at the same time.



- Press the ignition coils -1- by hand until they lock into place on the spark plugs.



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1.3 Removing and installing knock sensor 1 - G61-

Removing

- Disconnect plug connection -2-.
- Remove coolant pump and coolant regulator
⇒ ["2.1 Summary of components - coolant pump/thermostat", page 186](#) .



Note

The knock sensor 1 - G61- is positioned underneath the intake manifold behind the coolant pump.

- Unscrew the screw for knock sensor 1 - G61- .

Installing

The installation occurs in reverse order.

Tightening torques - summaries of components

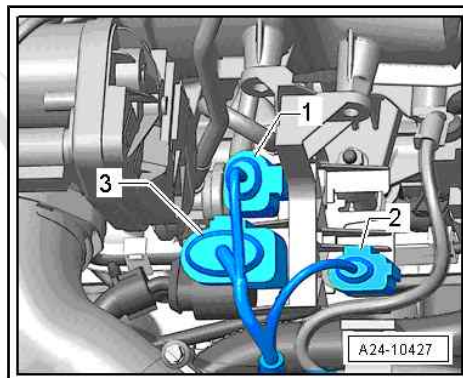


Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ♦ Knock sensor 1 - G61-
⇒ ["1.1 Assembly overview - ignition system", page 341](#) .

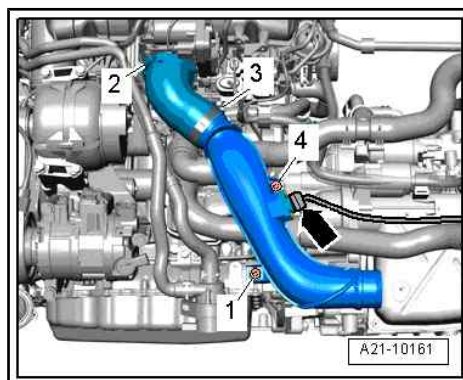
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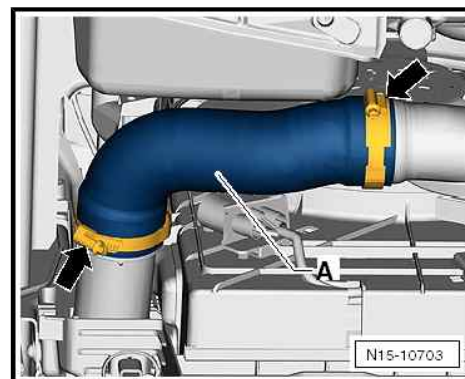
1.4 Removing and installing the engine speed transmitter - G28-

Removing

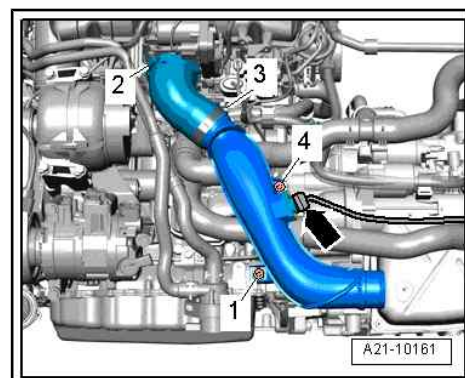
- Remove engine cover
⇒ ["1.5 Removing and installing engine trim panel", page 21](#) .
- Loosen hose clamp -2-.
- Remove connector -arrow- and expose the electrical cable.
- Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .



- Remove the charge air hose -A- and seal the charge air cooler with a clean cloth.



- Unscrew bolt -1- and -4- and remove the charge-air pipe by moving it downwards.



- Remove connector -1-, remove screw and remove engine speed sender - G28- .

Installing

The installation occurs in reverse order.

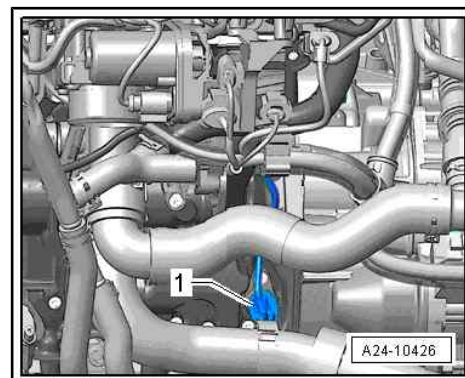
Tightening torques - summaries of components



Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ◆ Charge air pipe
⇒ [“2.1 Summary of components - charge air cooler”, page 274](#) .
- ◆ Engine speed sender - G28-
⇒ [“1.1 Assembly overview - ignition system”, page 341](#) .



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